

Brady Canal Hydrologic Restoration (TE-28) Project

Summary Data and Graphics 2002

Revised 11/10/2003



Folse, T. 2003. Brady Canal Hydrologic Restoration (TE-28) Project Summary Data and Graphics 2002.
LA Dept. Natural Resources, Coastal Restoration Division Baton Rouge, LA. 219 pp.

Brady Canal Hydrologic Restoration (TE-28)

Project Overview:

The Brady Canal Hydrologic Restoration Project consists of 7,653-ac (3,097-ha) located in the Terrebonne Basin, within the Bayou Penchant-Lake Penchant watershed. The project is bounded by Bayou Penchant, Brady Canal, and Little Carencro Bayou to the north, Bayou de Cade and Turtle Bayou to the south, Superior Canal to the east, and Little Carencro Bayou and Voss Canal to the west (Figure 1).

The project area is bisected by the Mauvais Bois Ridge, which results in different hydrologic regimes to the north and south of the ridge. The northern section of the project area still receives freshwater and sediments which is provided through overbank flow from Bayou Penchant, Little Canencro Bayou, and Brady Canal. The Mauvais Bois Ridge forms a barrier to reduce the outflow of freshwater. Freshwater and sediment retention has diminished in the southern portion of the project area due to unimpeded throughflow and tidal exchange combined with a decrease in freshwater and sediment.

Land loss data shows that during the period from 1932 to 1990, about 1,818-ac (736-ha) of land were converted to open water in the Brady Canal Hydrologic Restoration project area. Approximately 52% of the loss occurred over a 16 year period between 1958 and 1974. The average loss between 1932 and 1958 was approximately 18-ac (7.3-ha) per year while the average loss of 31-ac (12.5-ha) per year occurred between 1983 to 1990.

The increase of land loss in the project area was a result of major changes: (1) the hydrology of the Penchant Basin, both natural and human induced, was altered, (2) the natural levee ridge of Bayou de Cade had eroded below marsh elevation along the southern end of the project area, (3) higher salinity waters from the south began infiltrating the lower saline environment, (4) the tidal exchange at the southern end of the project area began to increase, and (5) there was a reduction in freshwater and sediment retention.



Brady Canal Hydrologic Restoration (TE-28)

Project Overview (continued):

The original project proposal involved the installation and maintenance of canal plugs along with the repair, construction, and maintenance of levees, the construction and maintenance of different types of weirs, the construction and maintenance of a rock plug, the construction and maintenance of rock, earthen, and/or rock and earthen embankments as well as the construction and maintenance of stabilized channel cross-sections. The structures are designed to reduce adverse tidal effects in the project area as well as to better utilize available freshwater and sediment.

A subsequent project, Penchant Basin Plan (TE-34), was authorized encompassing the entire Penchant Basin which included the Brady Canal Hydrologic Restoration project. Due to the proposed features of the TE-34 project, two construction features for the TE-28 project were not constructed. The features included the northern most structure and the overflow banks along Brady Canal in the northern section of the project.

Construction of the Brady Canal Hydrologic Restoration Project began in August 1999 and ended in July 2000. During this period, the following features were constructed: three fixed crest weirs with variable crest section(s), a fixed crest weir with barge bay, a fixed crest weir, two rock armored channel liners, a rock plug, and three different embankment types (rock armored earthen embankment, rock dike, and earthen embankment) (Figure 1).

Breaches along Bayou Decade east of Jug Lake were not closed during construction. At the end of 2002, the Louisiana Department of Natural Resources – Coastal Restoration Division’s Operation and Maintenance Engineering section from the Thibodaux Field Office was in the process of acquiring approval to close the breaches.



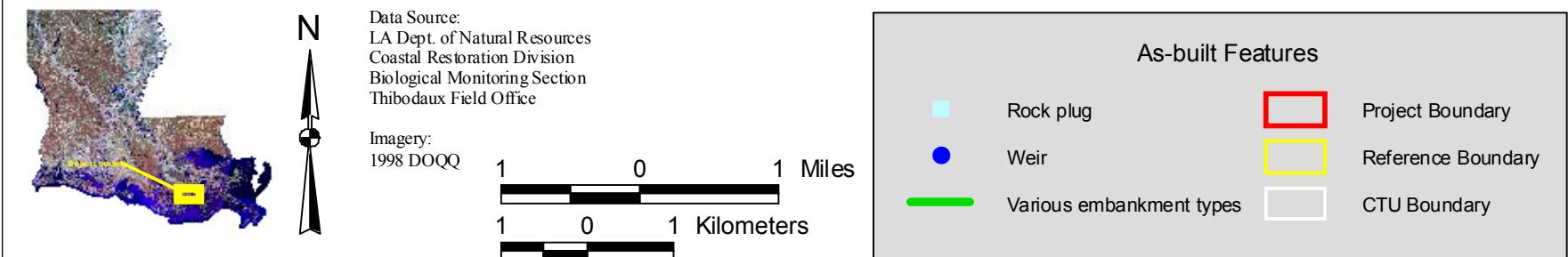
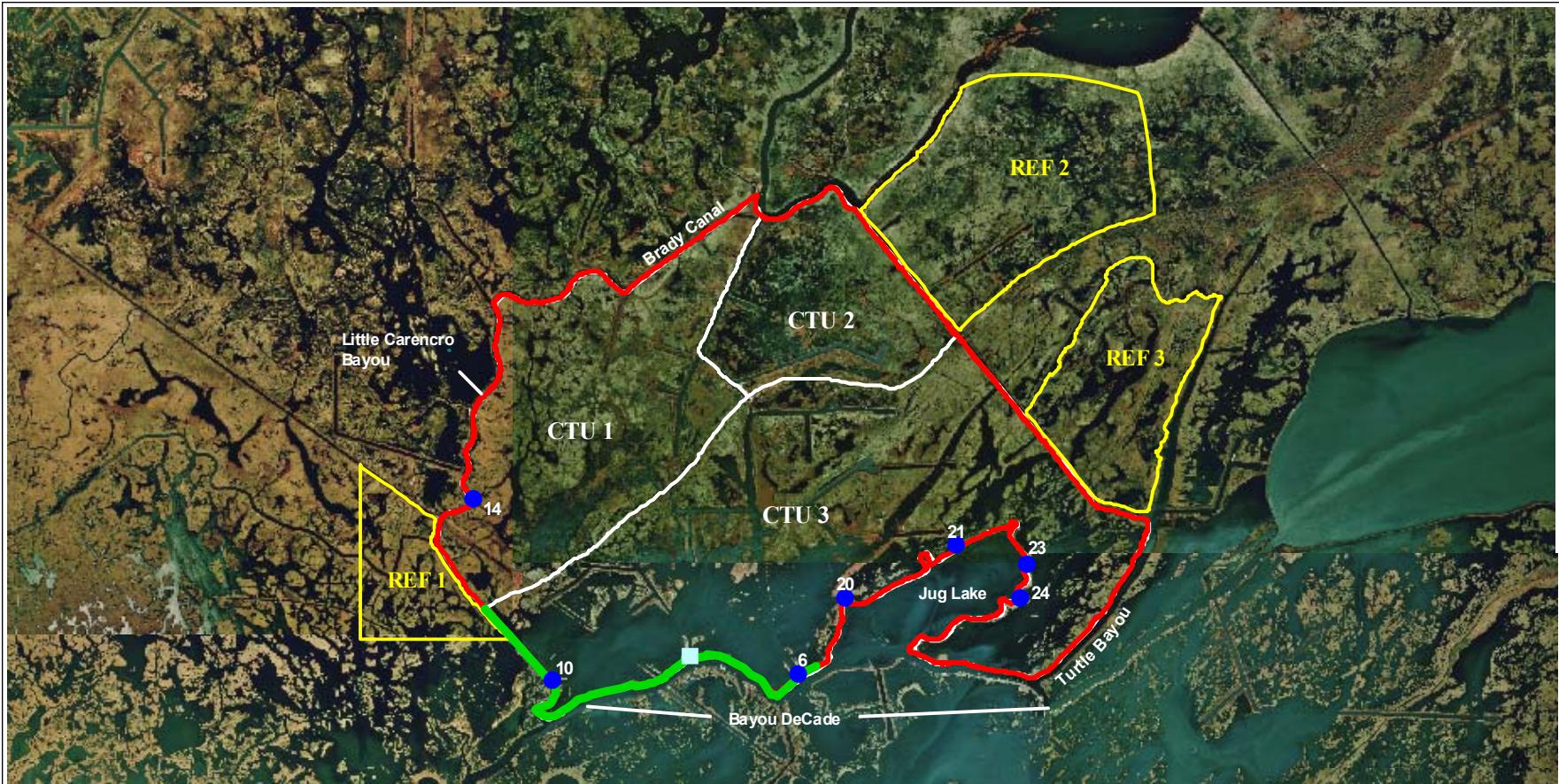


Figure 1. Project Infrastructure Completed as of July 2002 at Brady Canal Hydrologic Restoration (TE-28).



As-Built Features

- Fixed crest weir with variable crest section(s) (site 14, 21, and 23)
- Rock armored channel liner (site 10 and 20)
- Rock plug
- Fixed crest weir with barge bay (site 6)
- Fixed crest weir (site 24)
- Embankment types
 - Rock armored earthen embankment
 - Rock dike
 - Earthen embankment



Project Objectives

1. Maintain and enhance existing marshes in the project area by reducing the rate of tidal exchange.
2. Improve the retention of introduced freshwater and sediment.



Specific Goals

1. Decrease the rate of marsh loss.
2. Maintain or increase the abundance of plant species typical of a freshwater and intermediate marsh.
3. Decrease variability in water level within the project area.
4. Decrease variability in salinities in the southern portion of the project.
5. Increase vertical accretion within the project area.
6. Increase the frequency of occurrence of submerged aquatic vegetation (SAV) within the project area.



Monitoring Elements

1. Water level and Salinity

- Hourly continuous readings
- 1996-2000 (pre-const.) and 2000-2005 (post-const.)
- 7 stations throughout the project and reference areas

2. Marsh Mat Movement

- Water level variability and frequency of marsh flooding in CTU 2 and REF 2 only
- 1998-2000 (pre-const.) and 2000-2005 (post-const.)
- 2 stations (1 in CTU 2 and 1 in REF 2)

3. Discrete Hydrology

- Monthly water temperature, specific conductance, salinity and water depth readings
- 1996-2000 (pre-const.) and 2000-2005 (post-const.)
- 42 stations throughout the project and reference areas



Monitoring Elements

4. Submerged Aquatic Vegetation (SAV)

- Frequency of occurrence
- 1996, 1997, 1999 (pre-const.) and 2002, 2006, 2012, and 2015 (post-const.)
- 30 stations (5 stations in each CTU and REF)

5. Vegetation

- Species richness and relative abundance
- 1996 and 1999 (pre-const.) and 2002, 2004, 2006, 2009, 2012, and 2015 (post-const.)
- 60 stations (10 stations in each CTU and REF area with 2 stations at 5 boardwalks)



Monitoring Elements

6. Accretion

- Feldspar sampling technique
- 1997/1998 (pre-construction) and 2000/2001, 2004, 2006, 2009, 2012, and 2015 (post-const.)
- 90 stations (15 stations in each CTU and REF area with 3 stations at 5 boardwalks)

7. Habitat Mapping

- 1:12,000 scale
- 1998 (pre-const.) and 2002, 2008, and 2017 (post-const.)



Water Level and Salinity Data



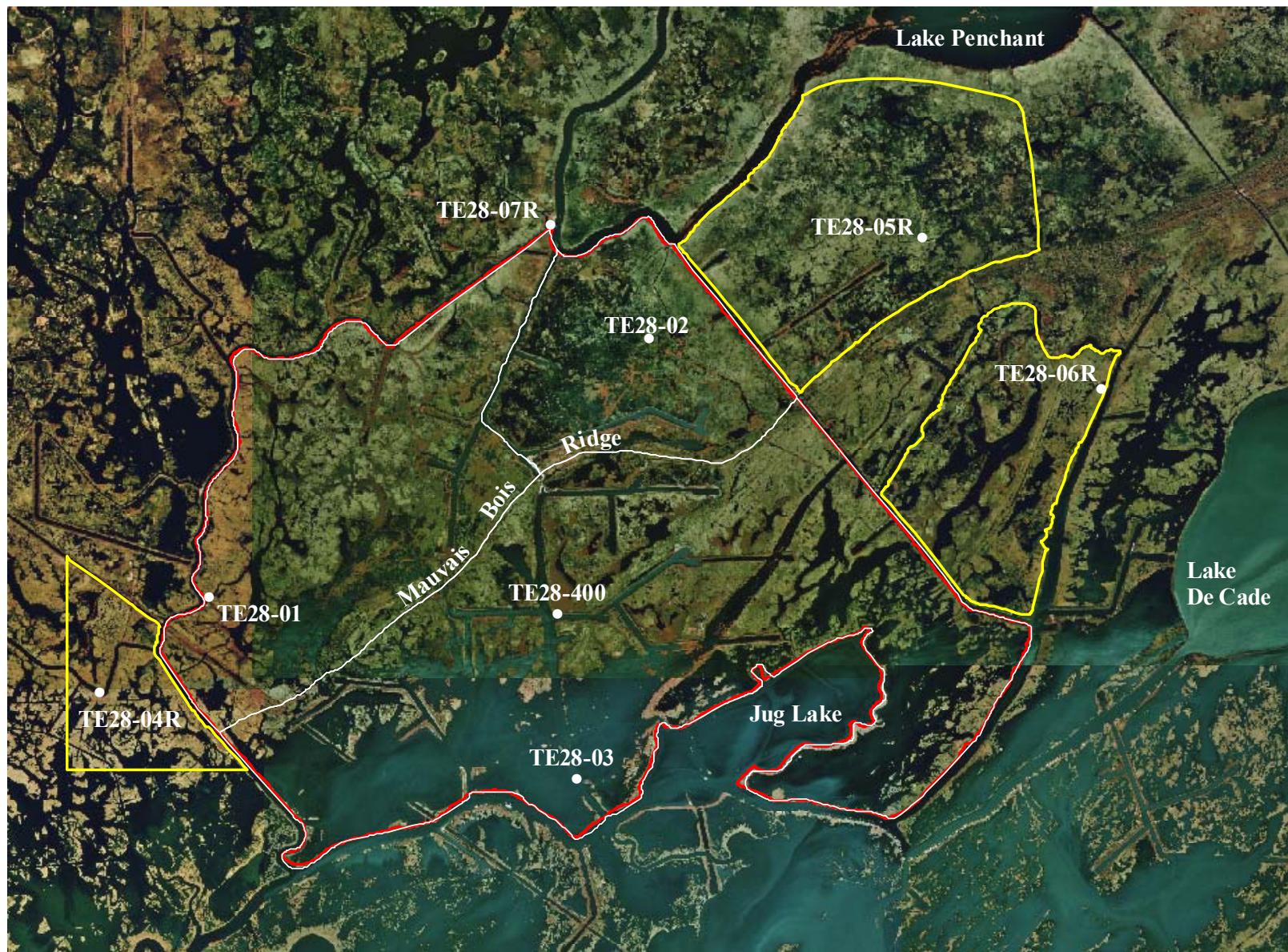


Figure 2. Location of continuous recorder stations at Brady Canal Hydrologic Restoration (TE-28).

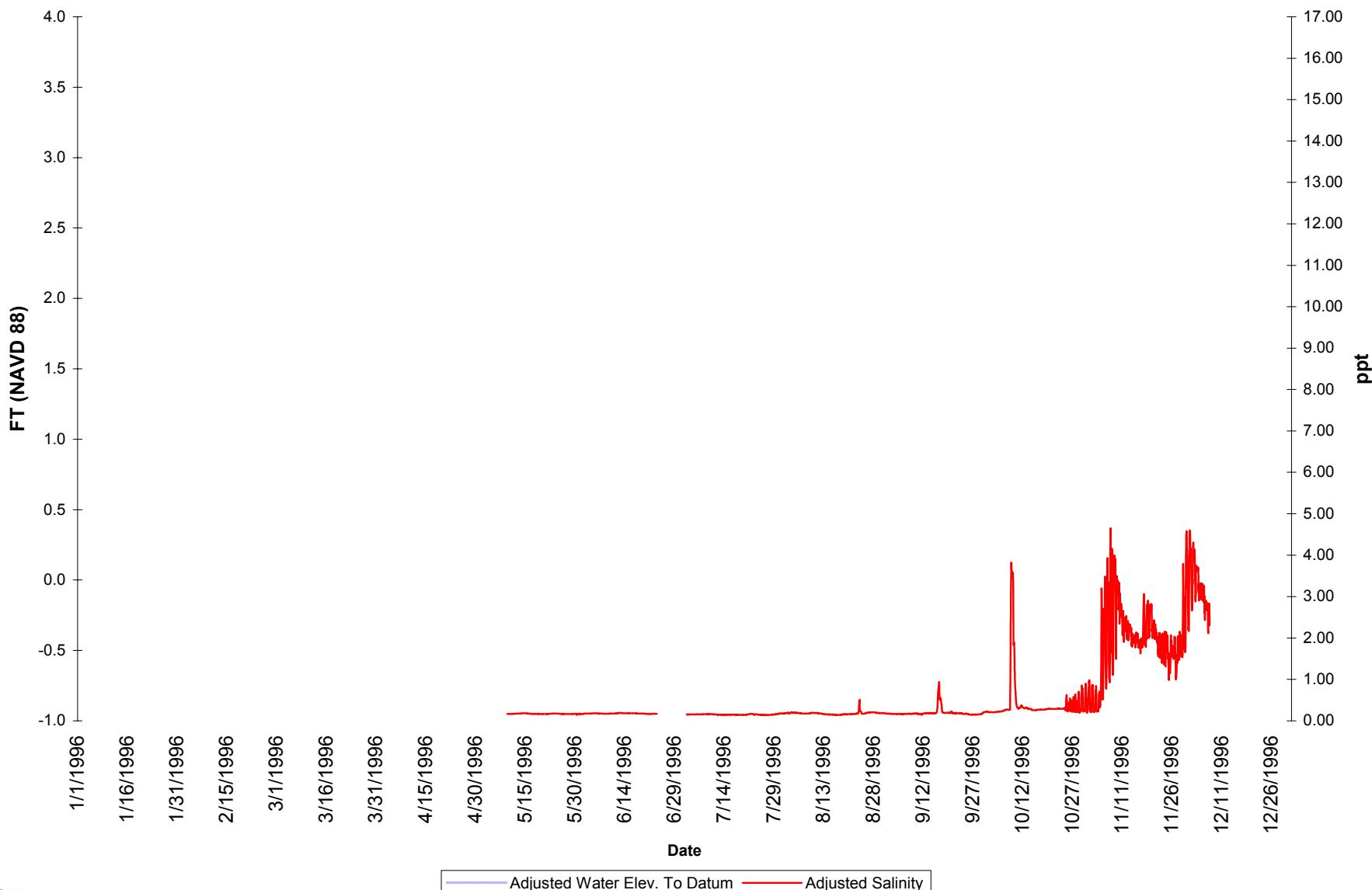


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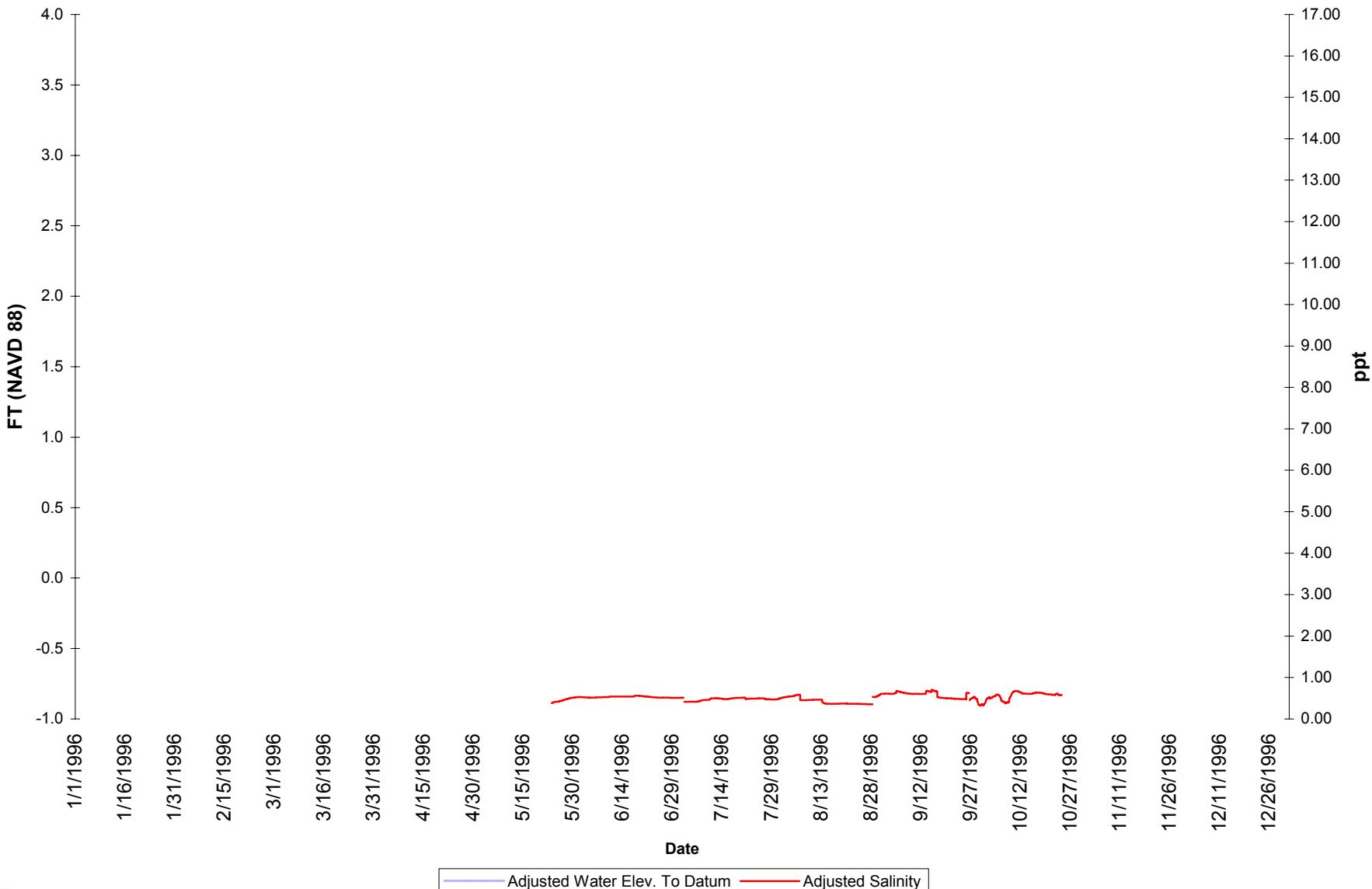
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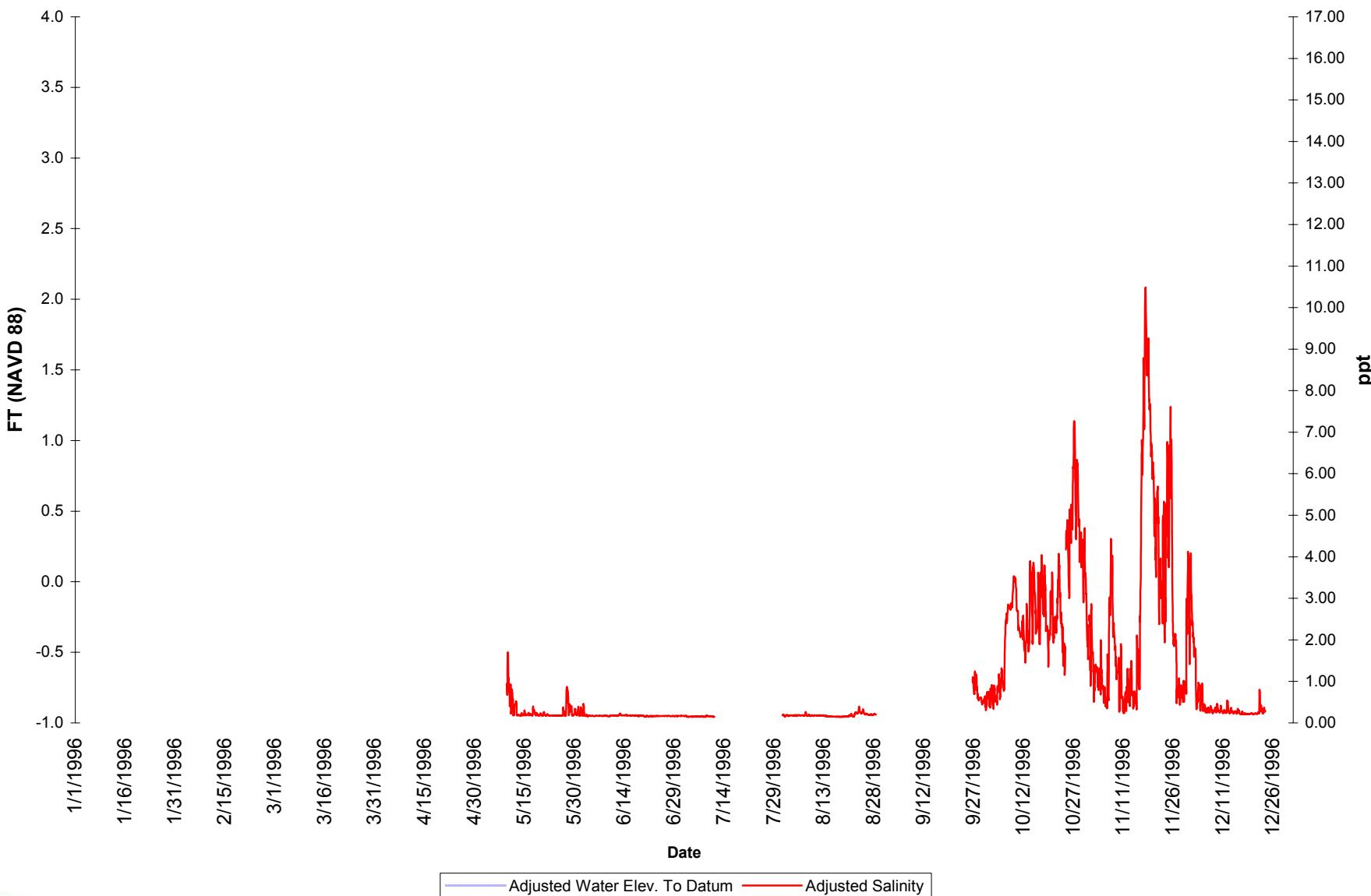
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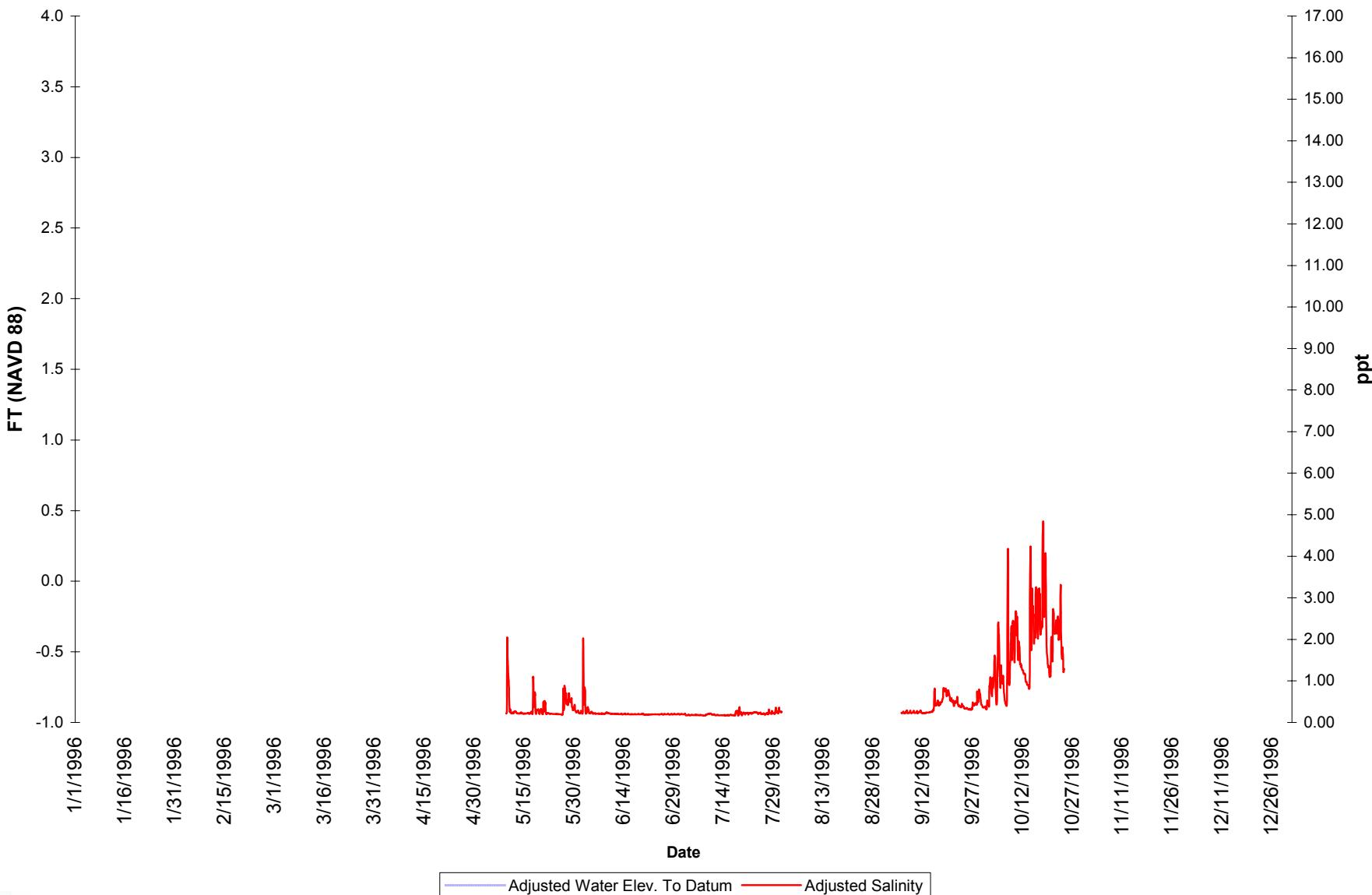
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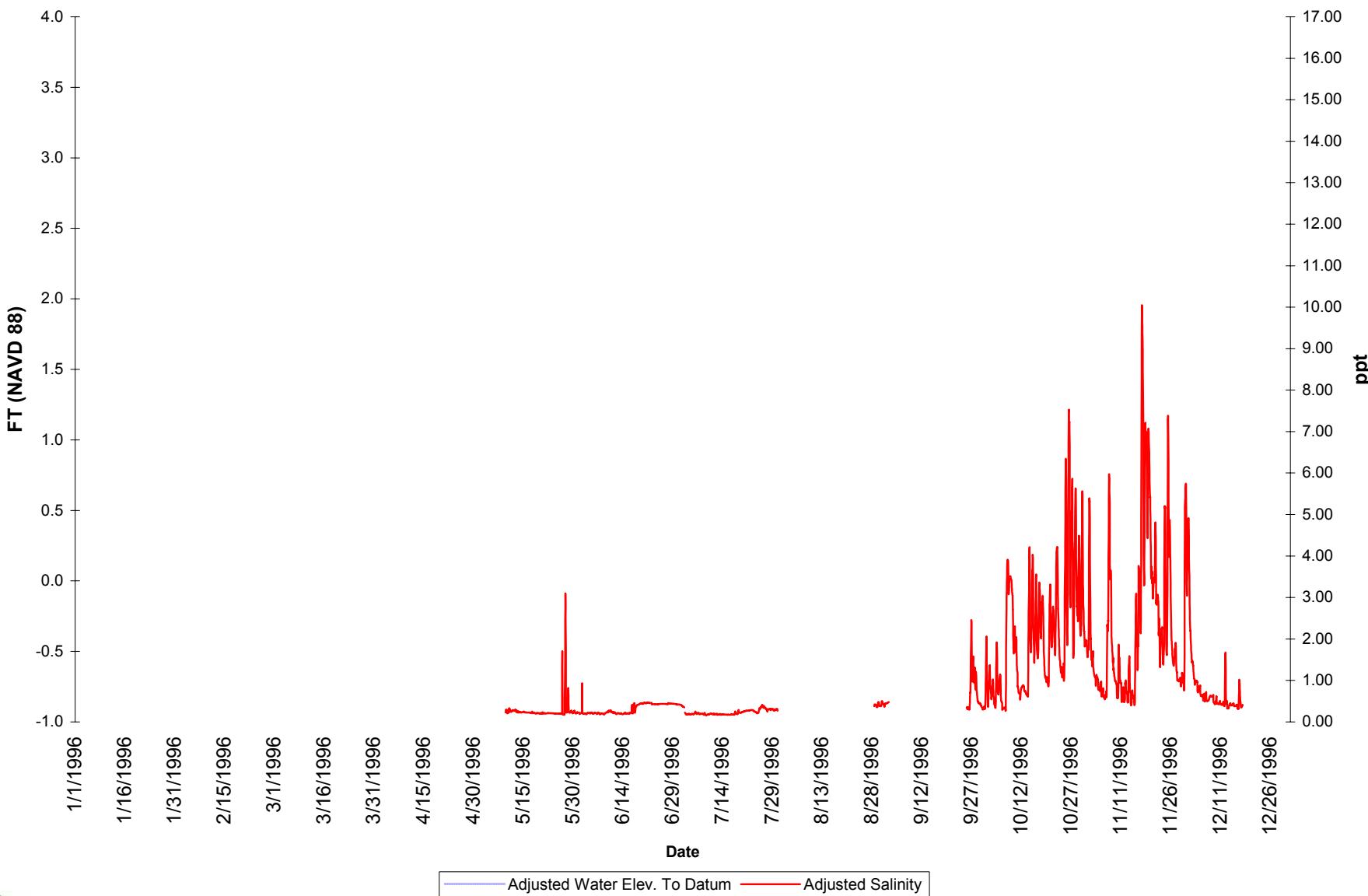
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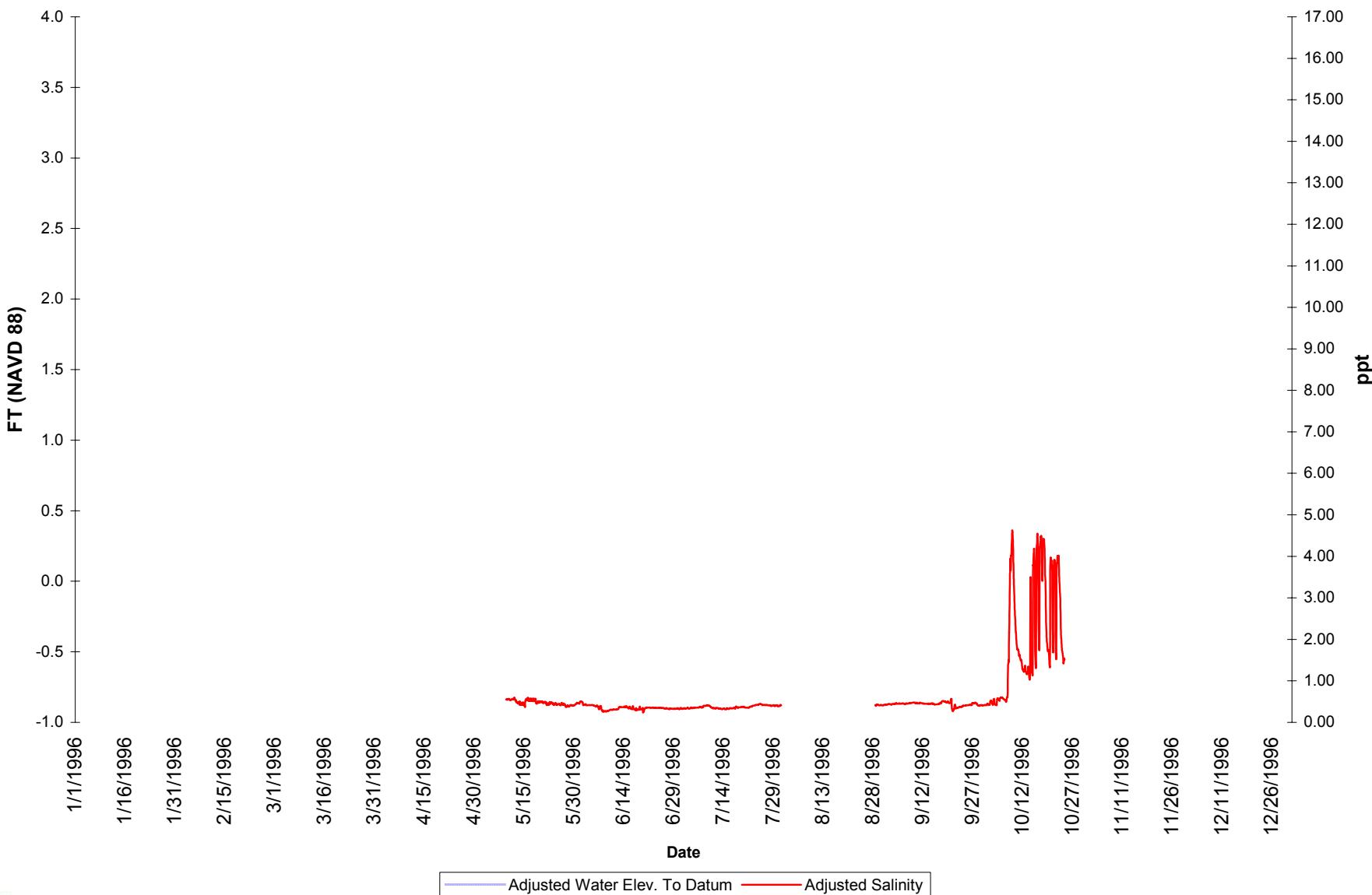
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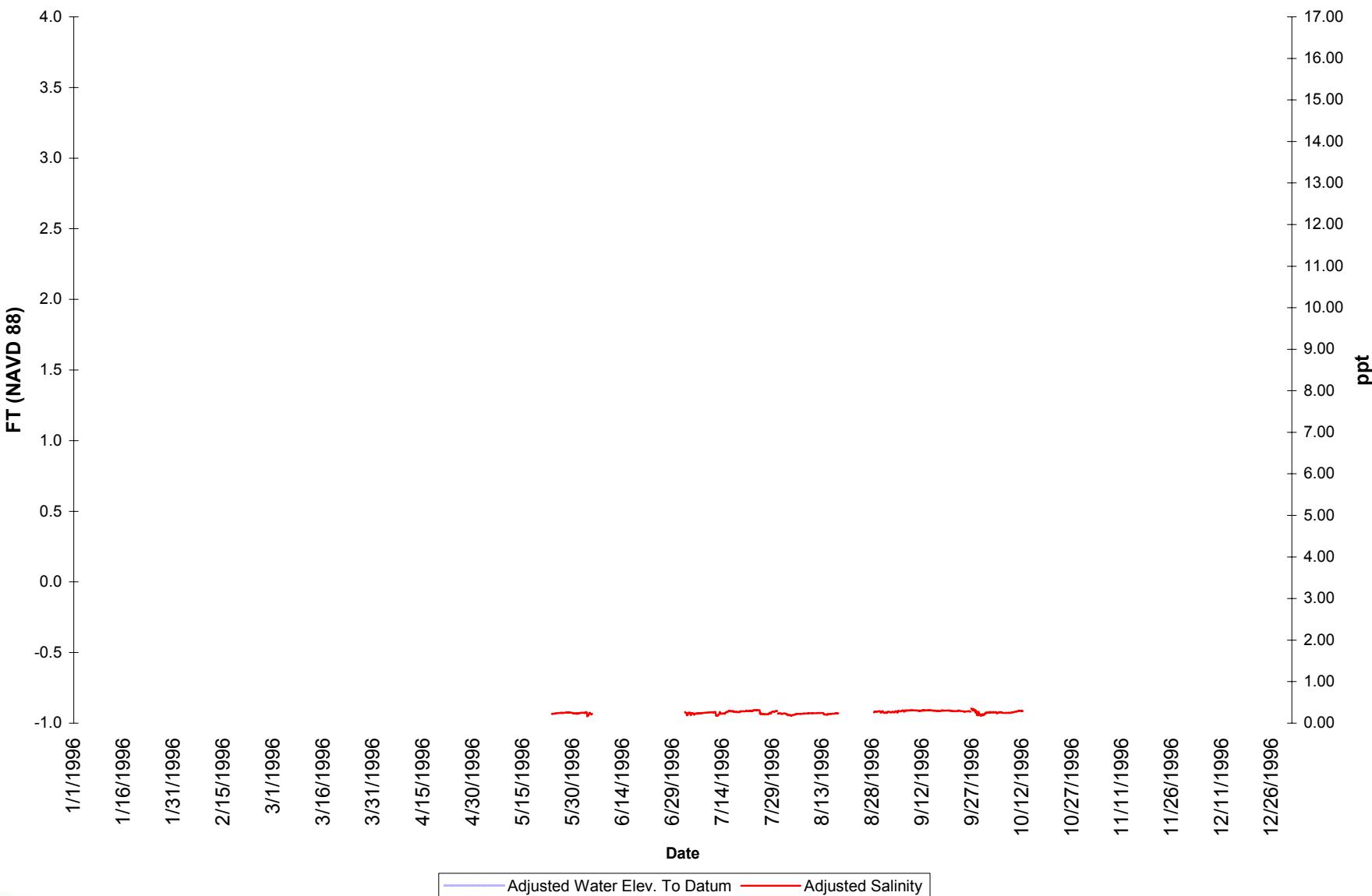
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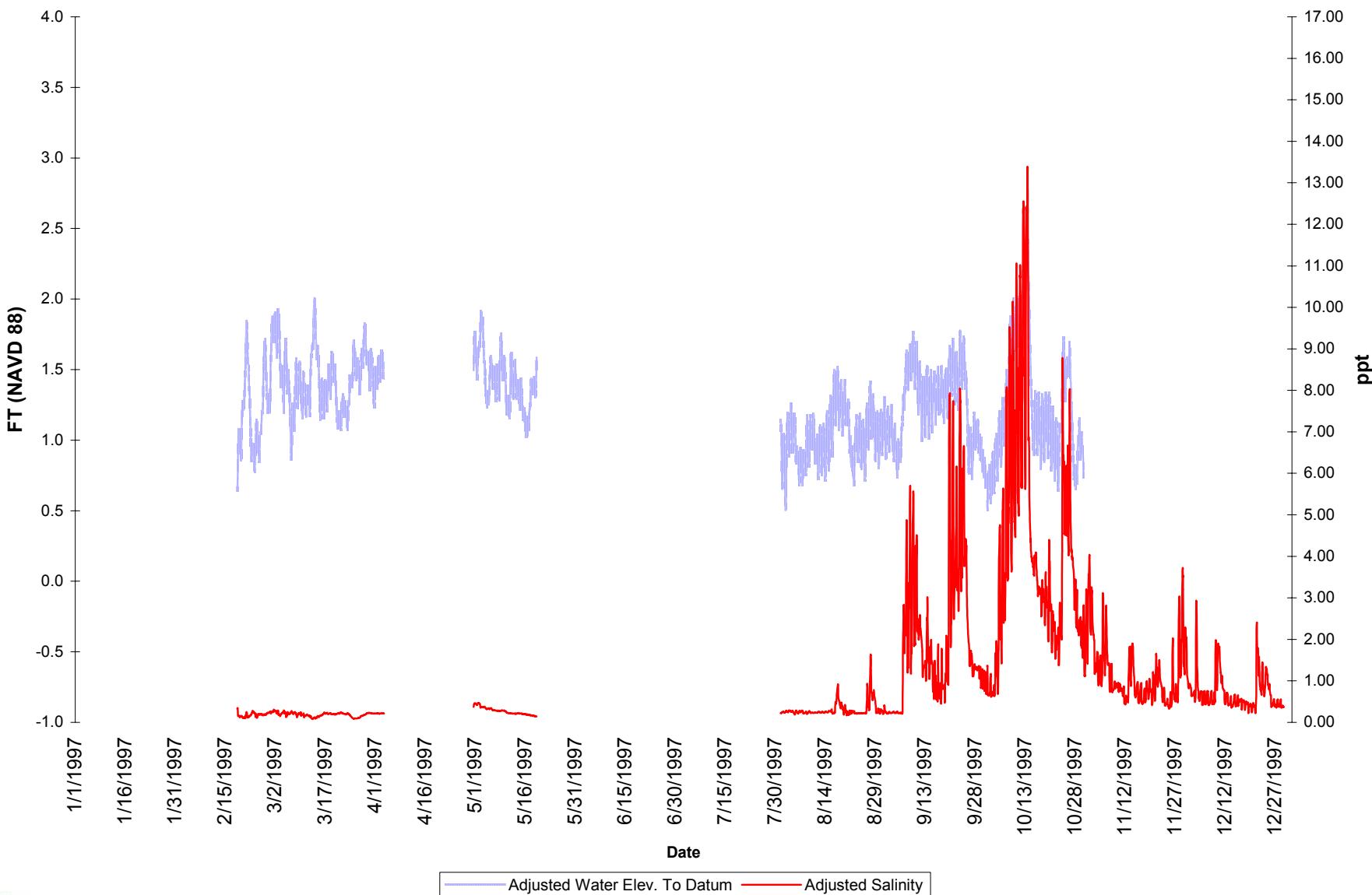


Water Level and Salinity Data

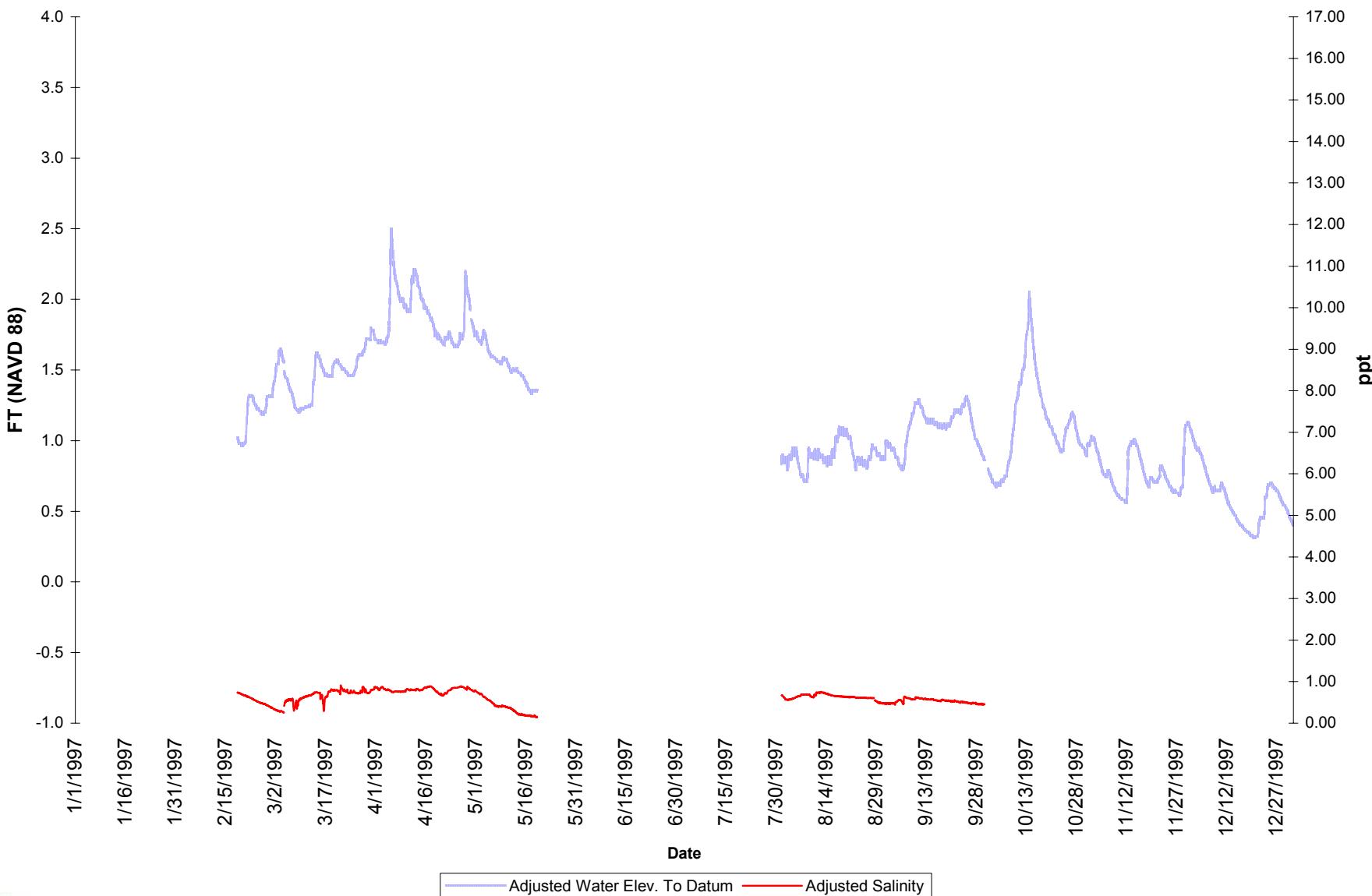
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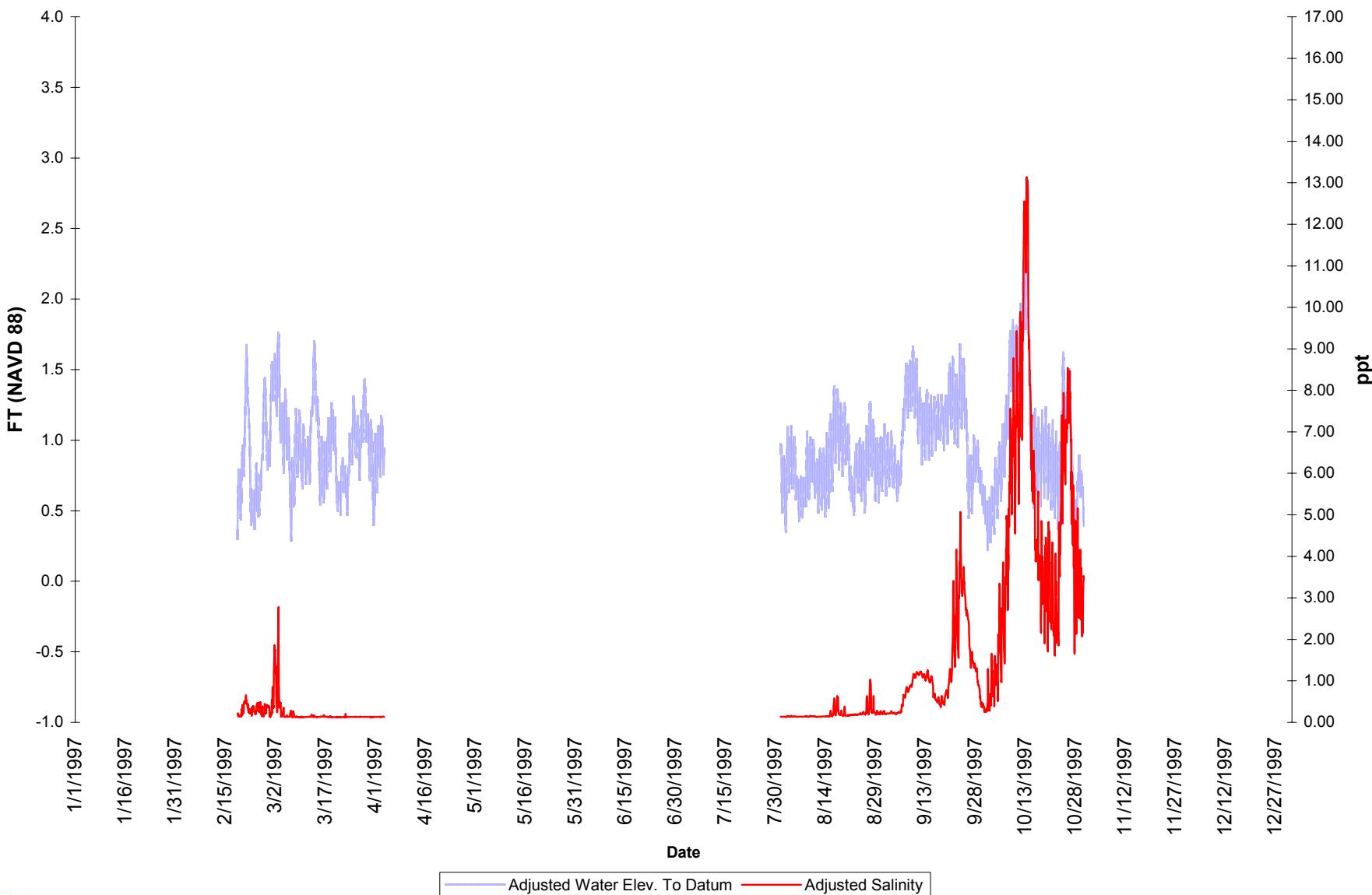
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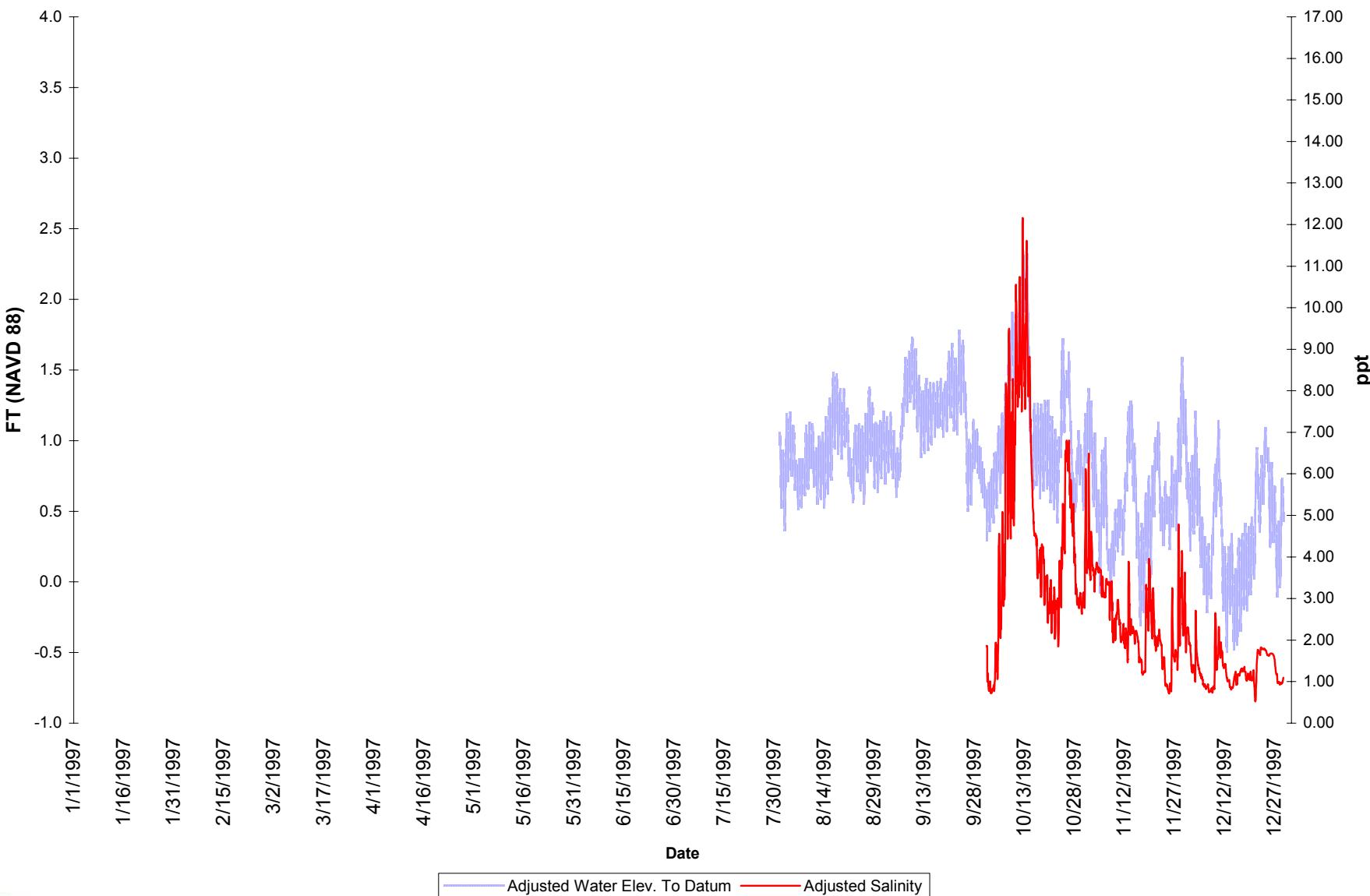
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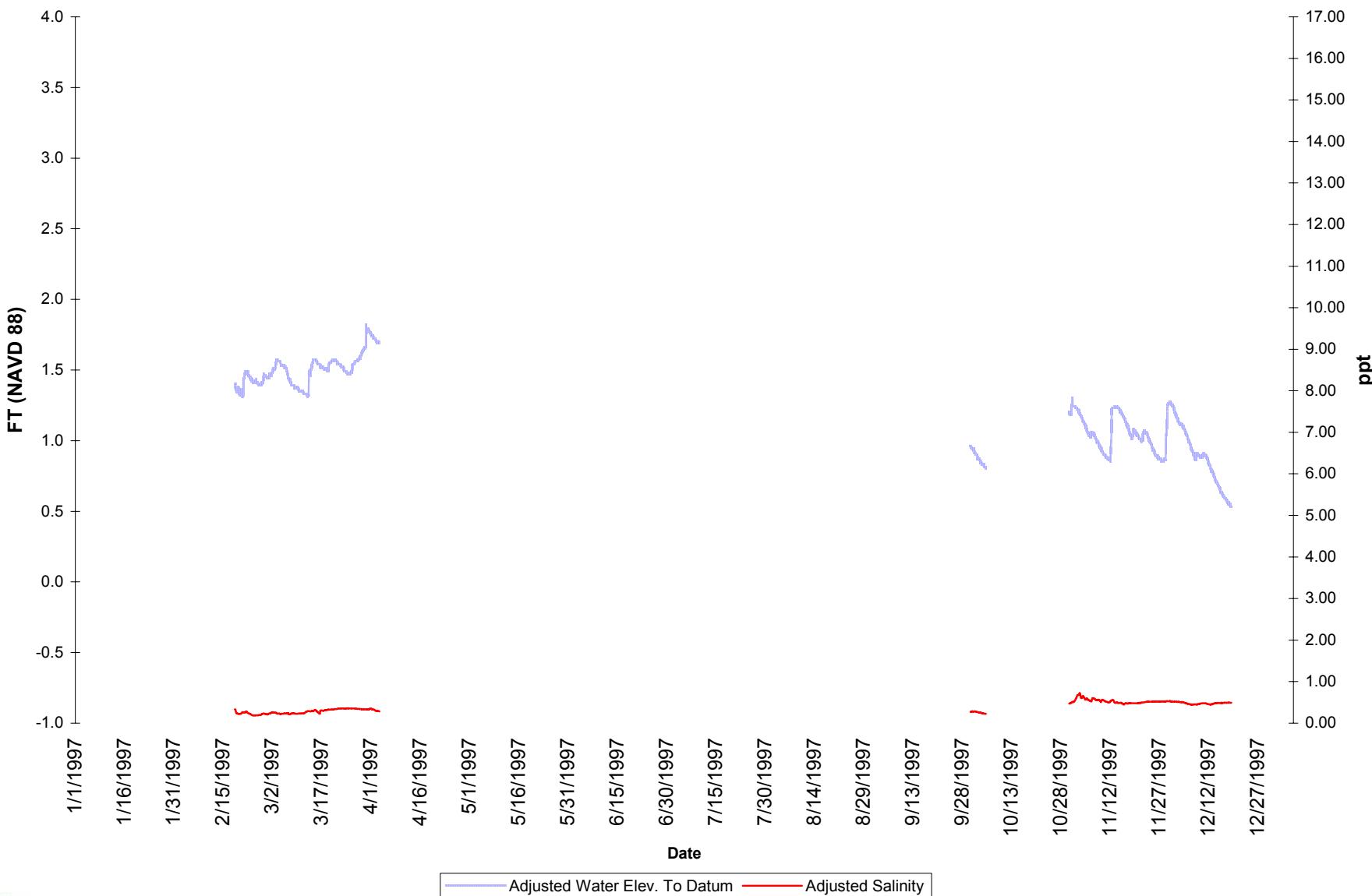
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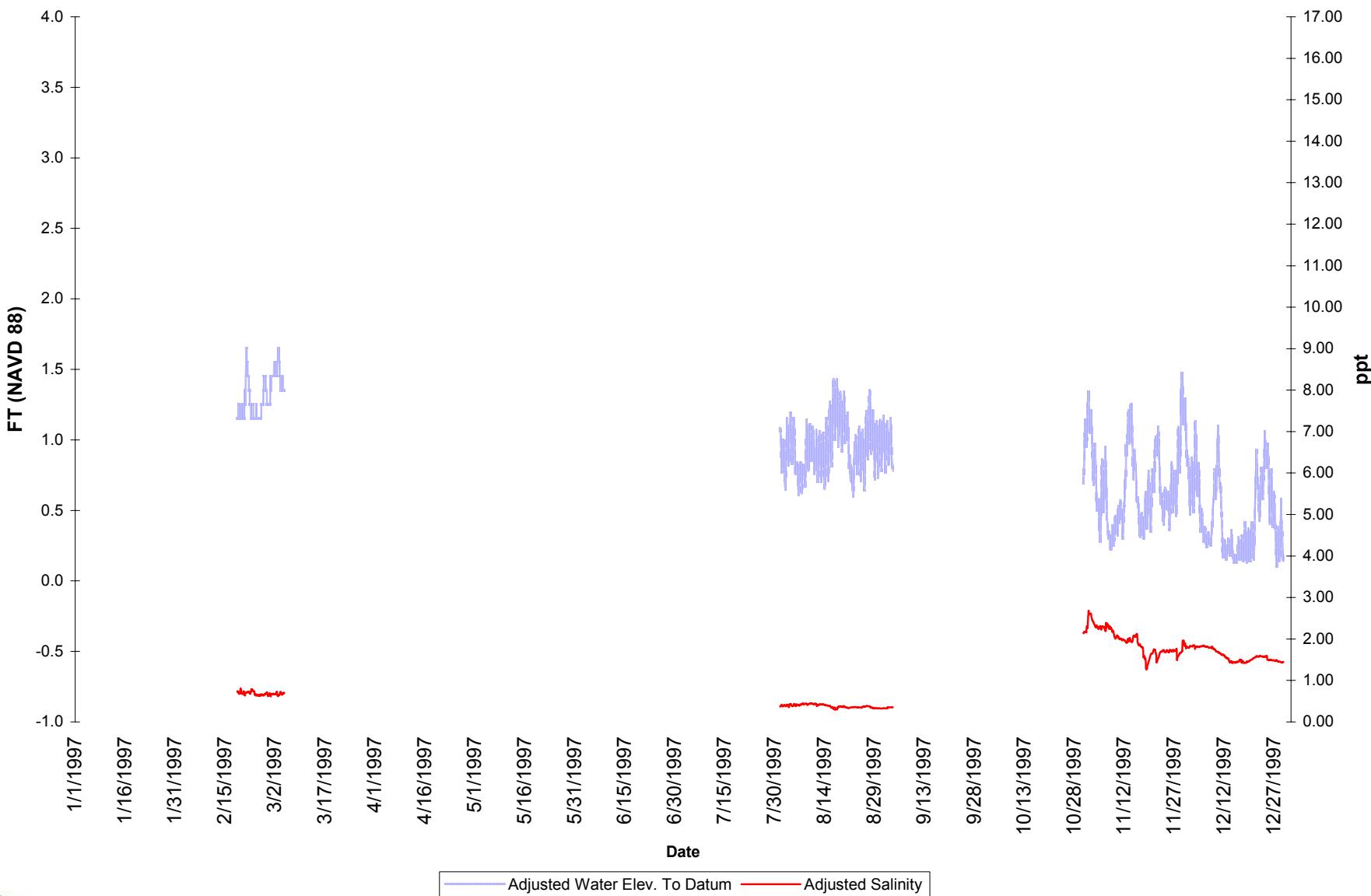
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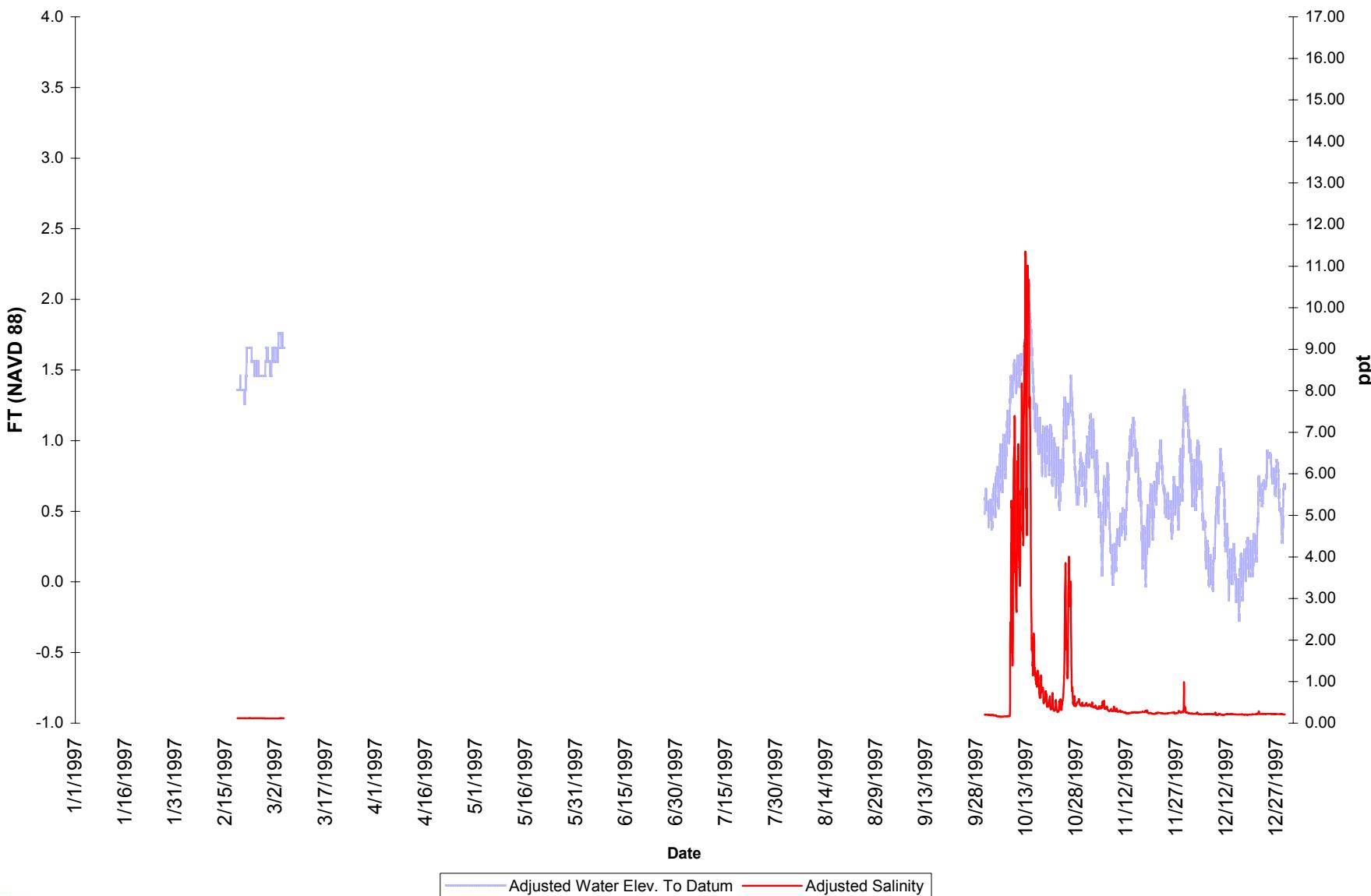
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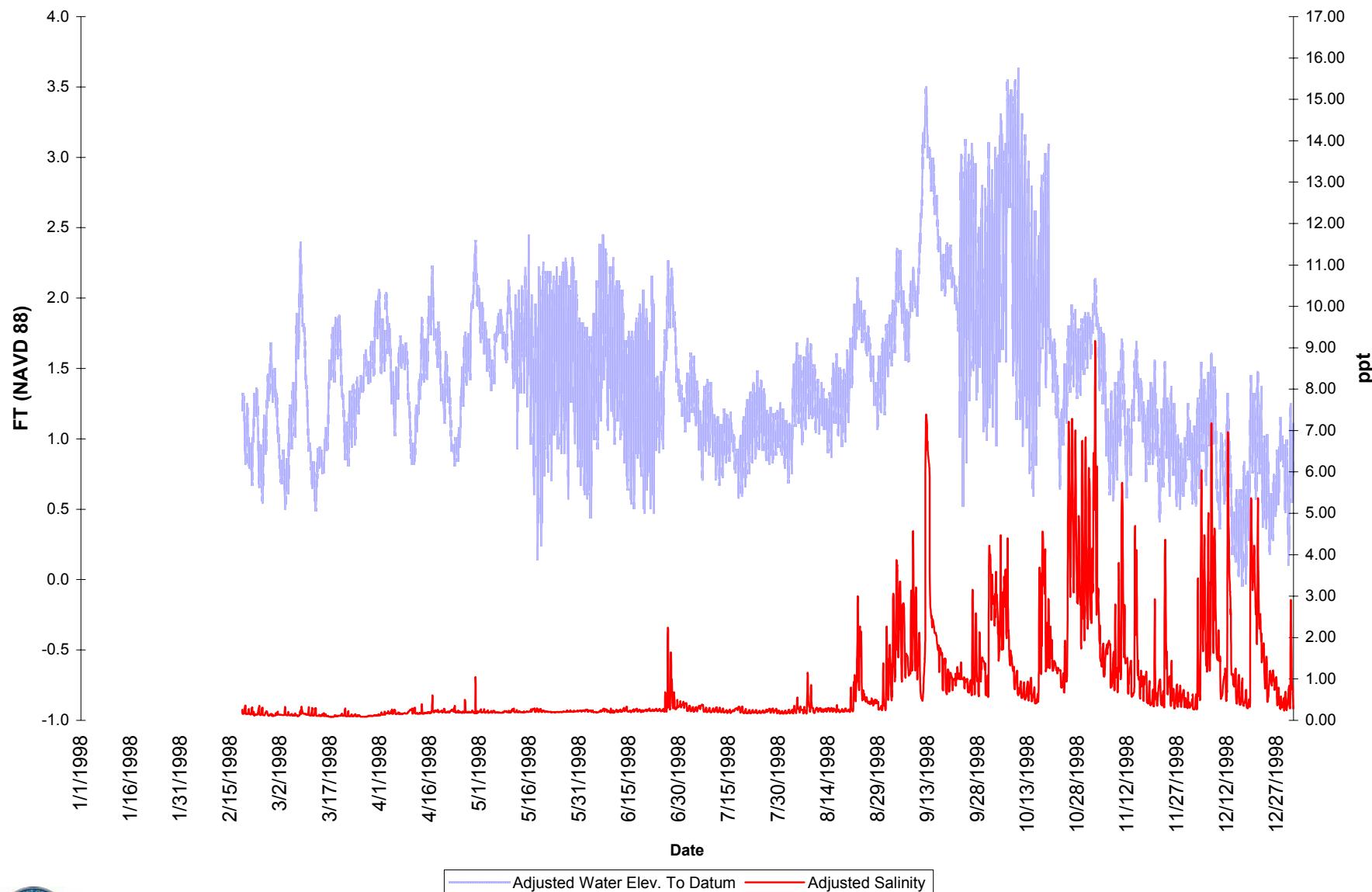
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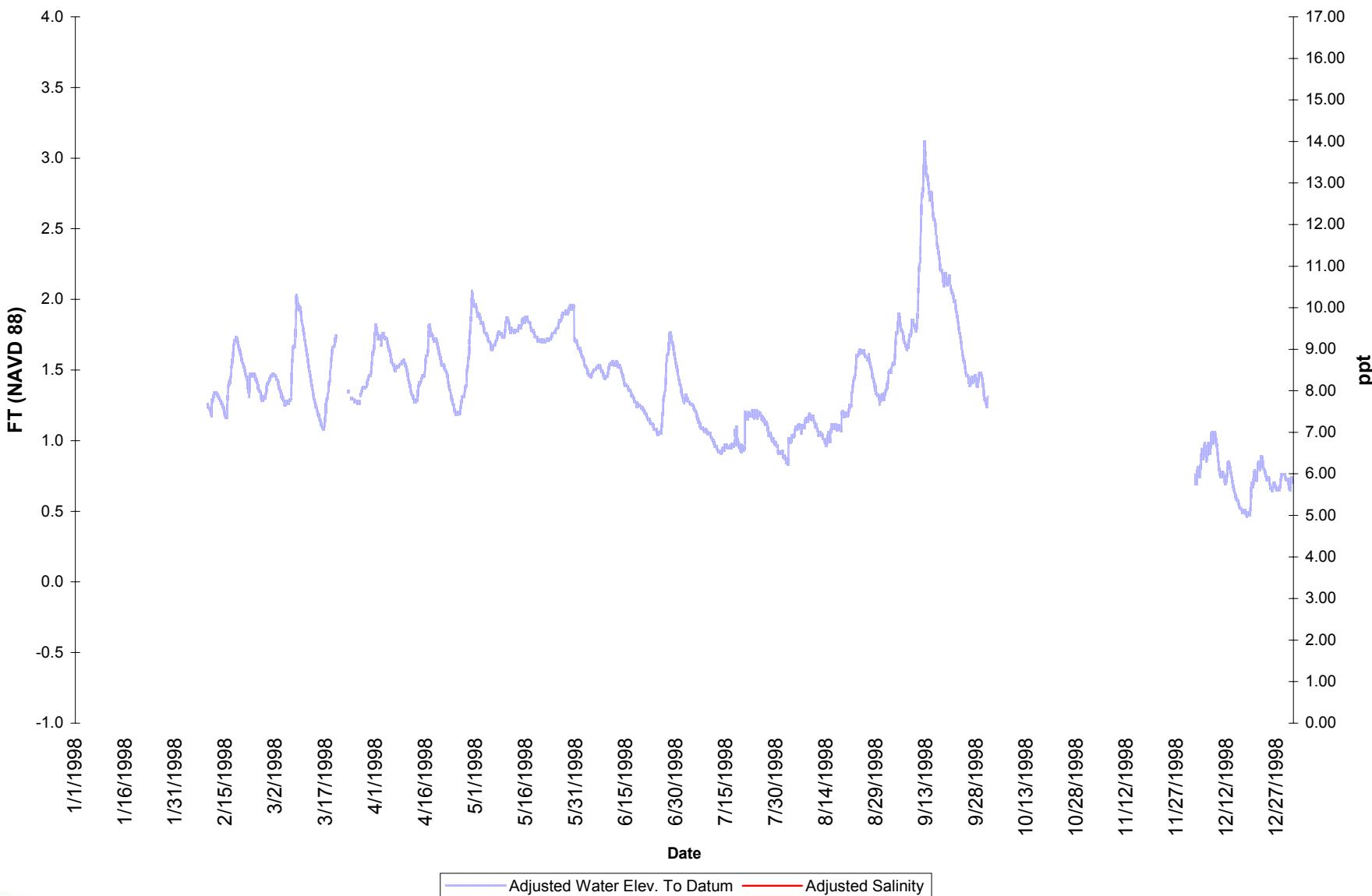
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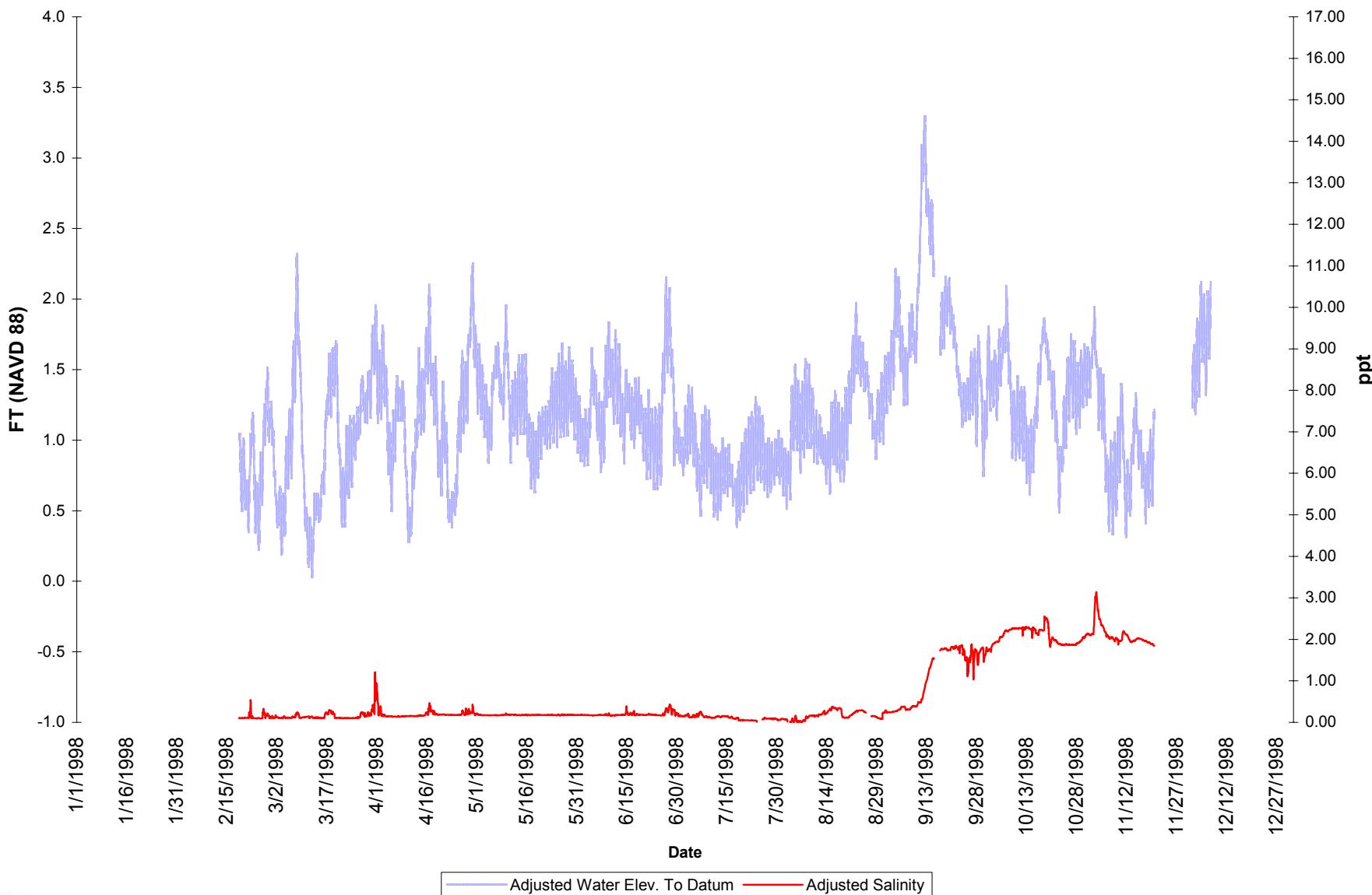
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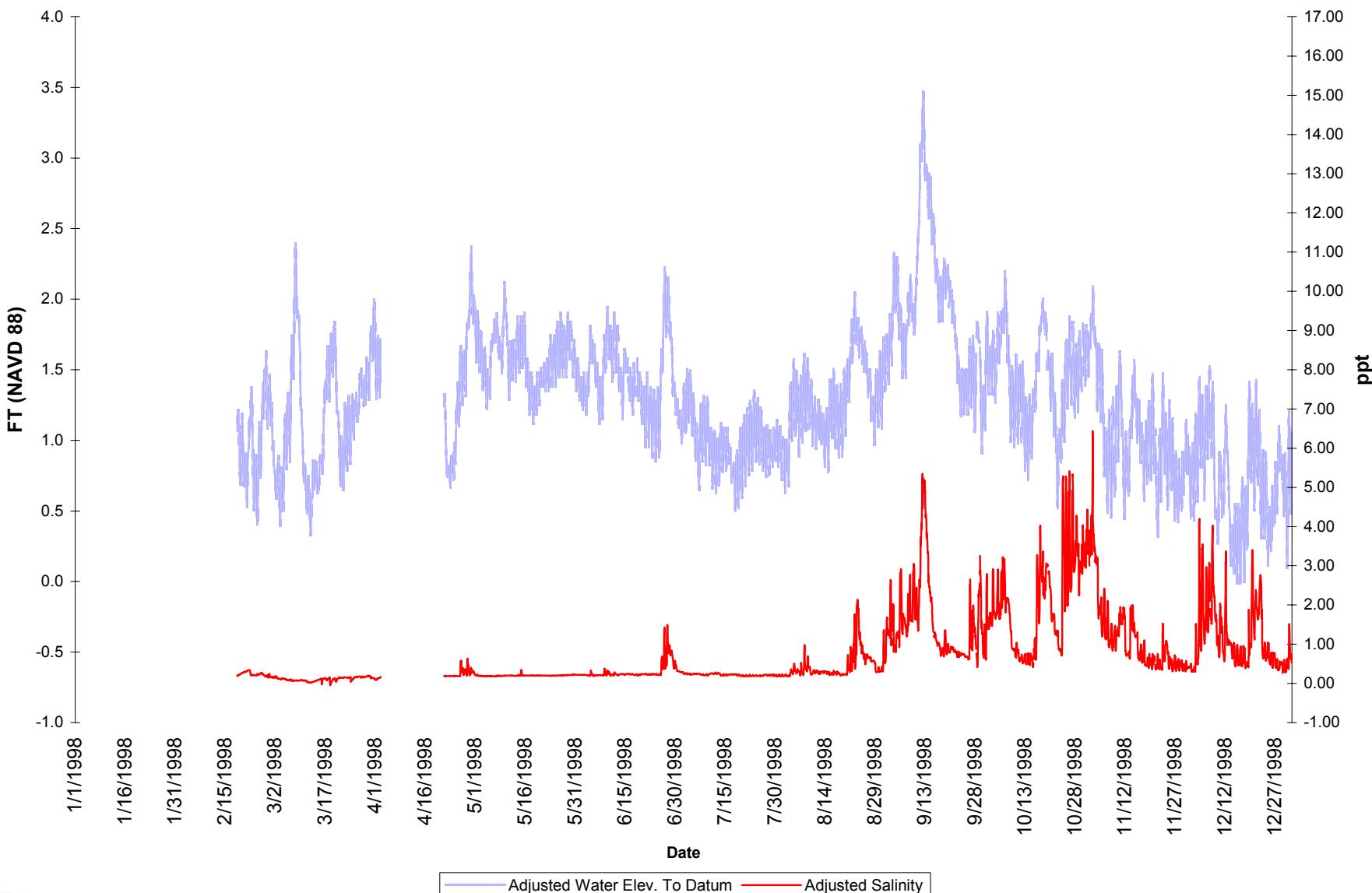
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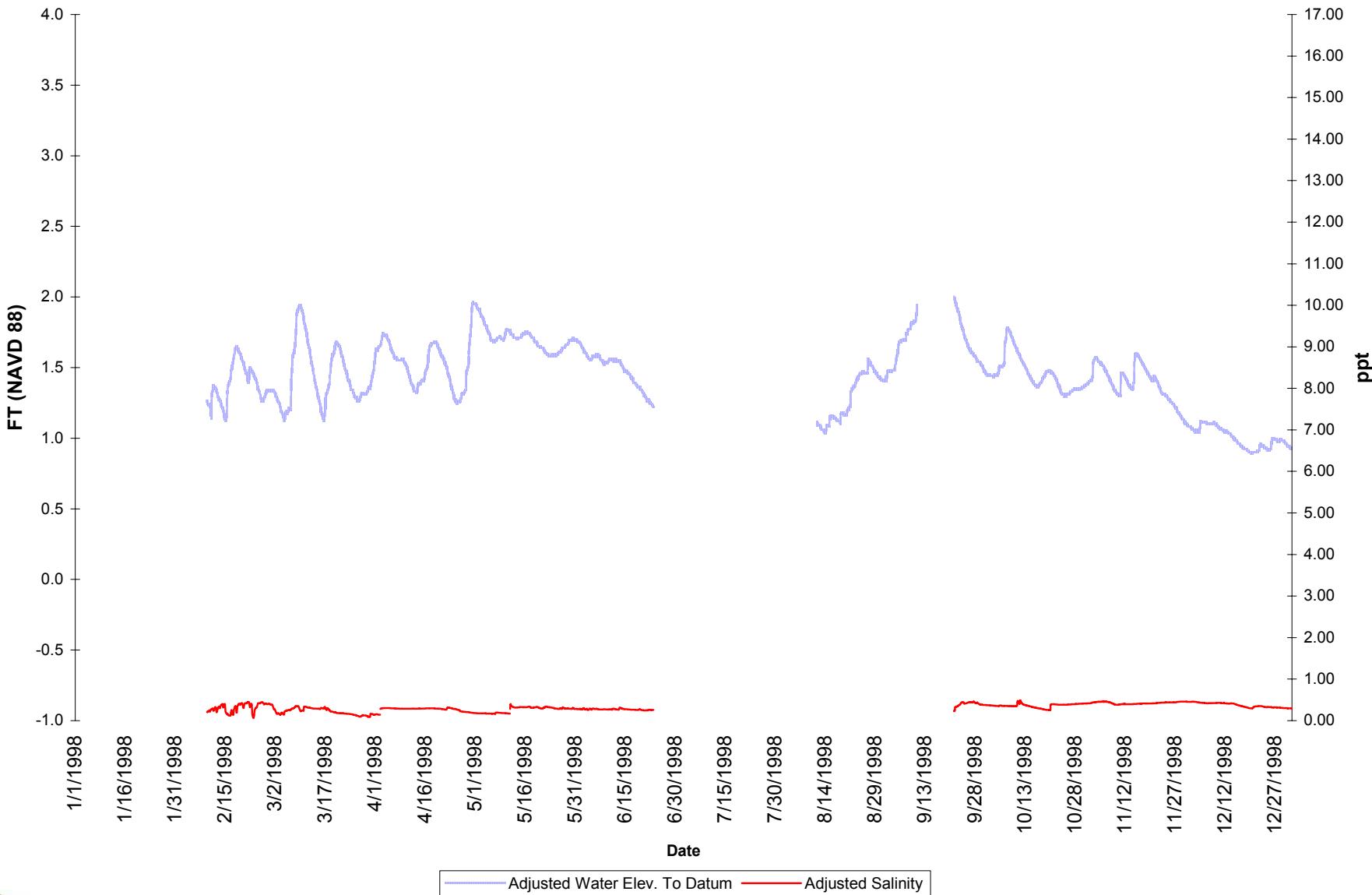
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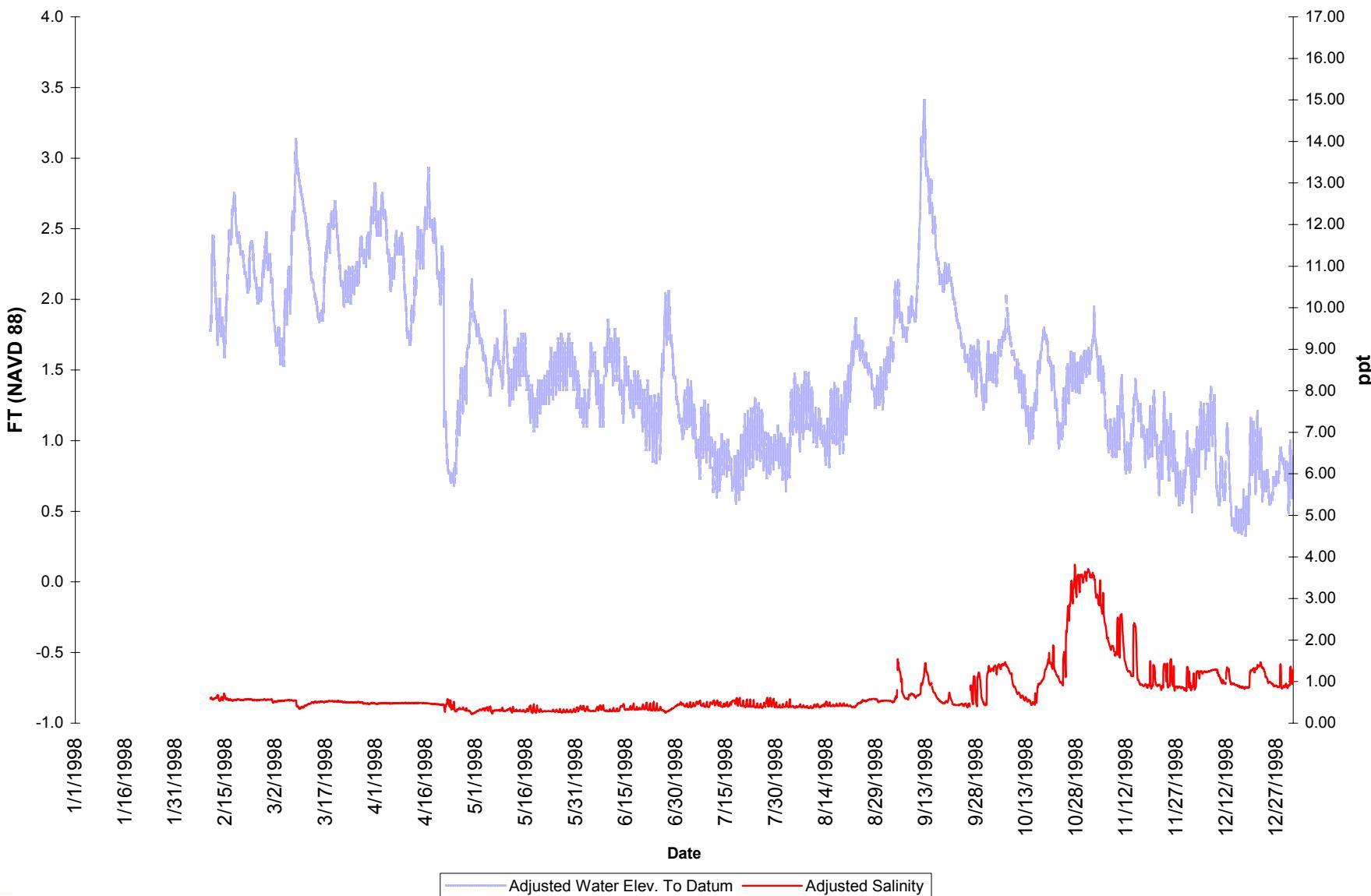
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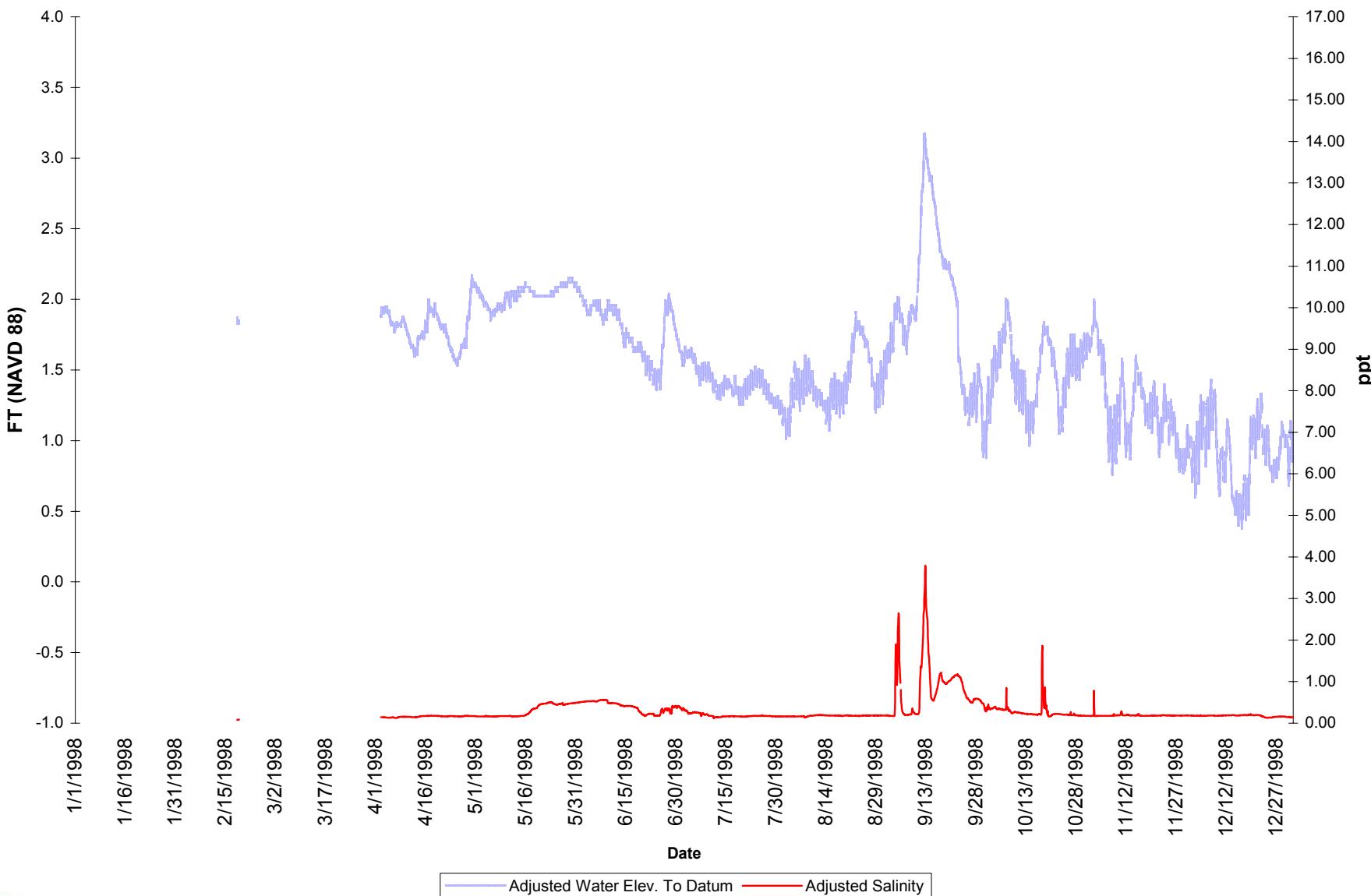
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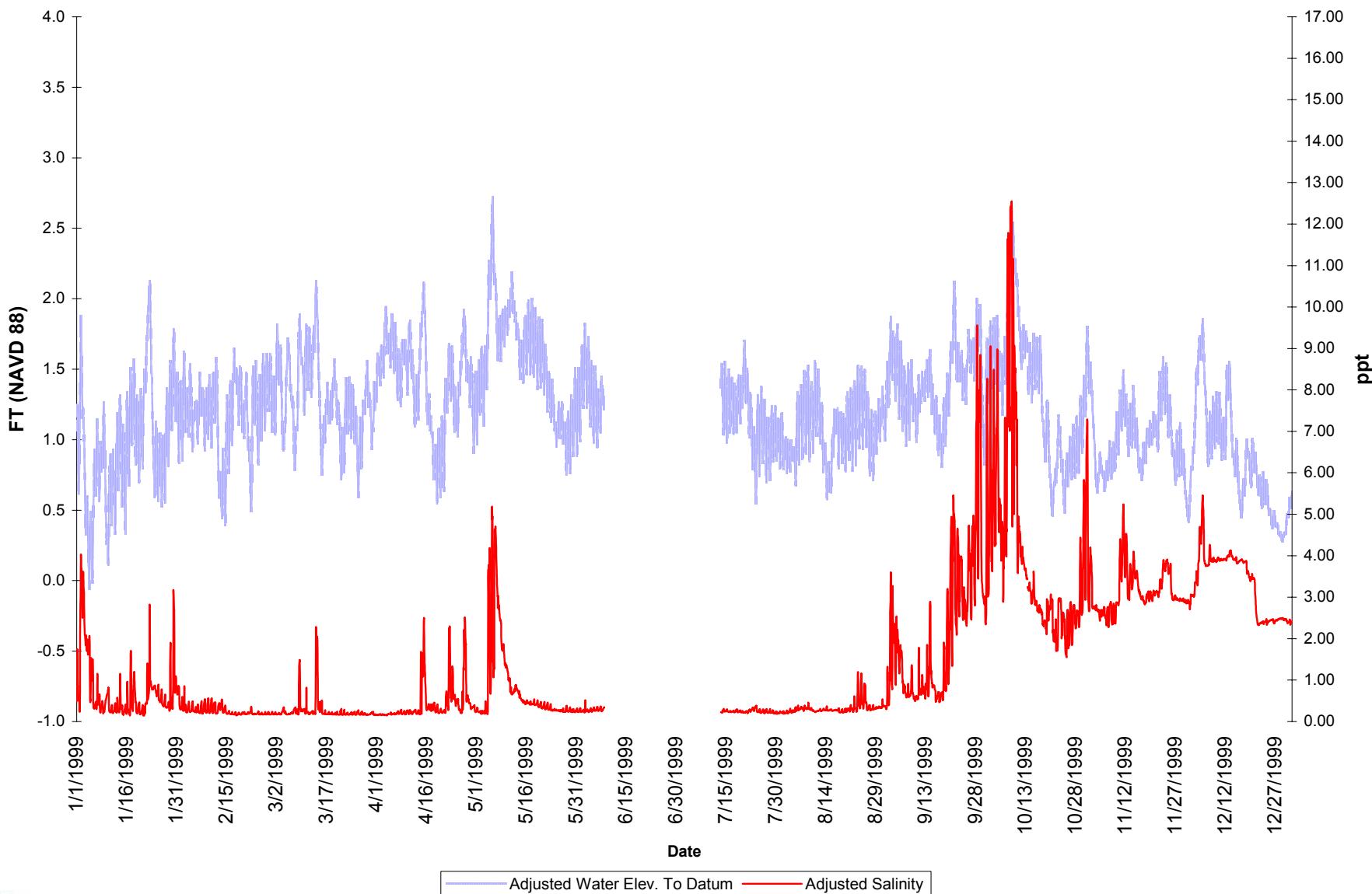
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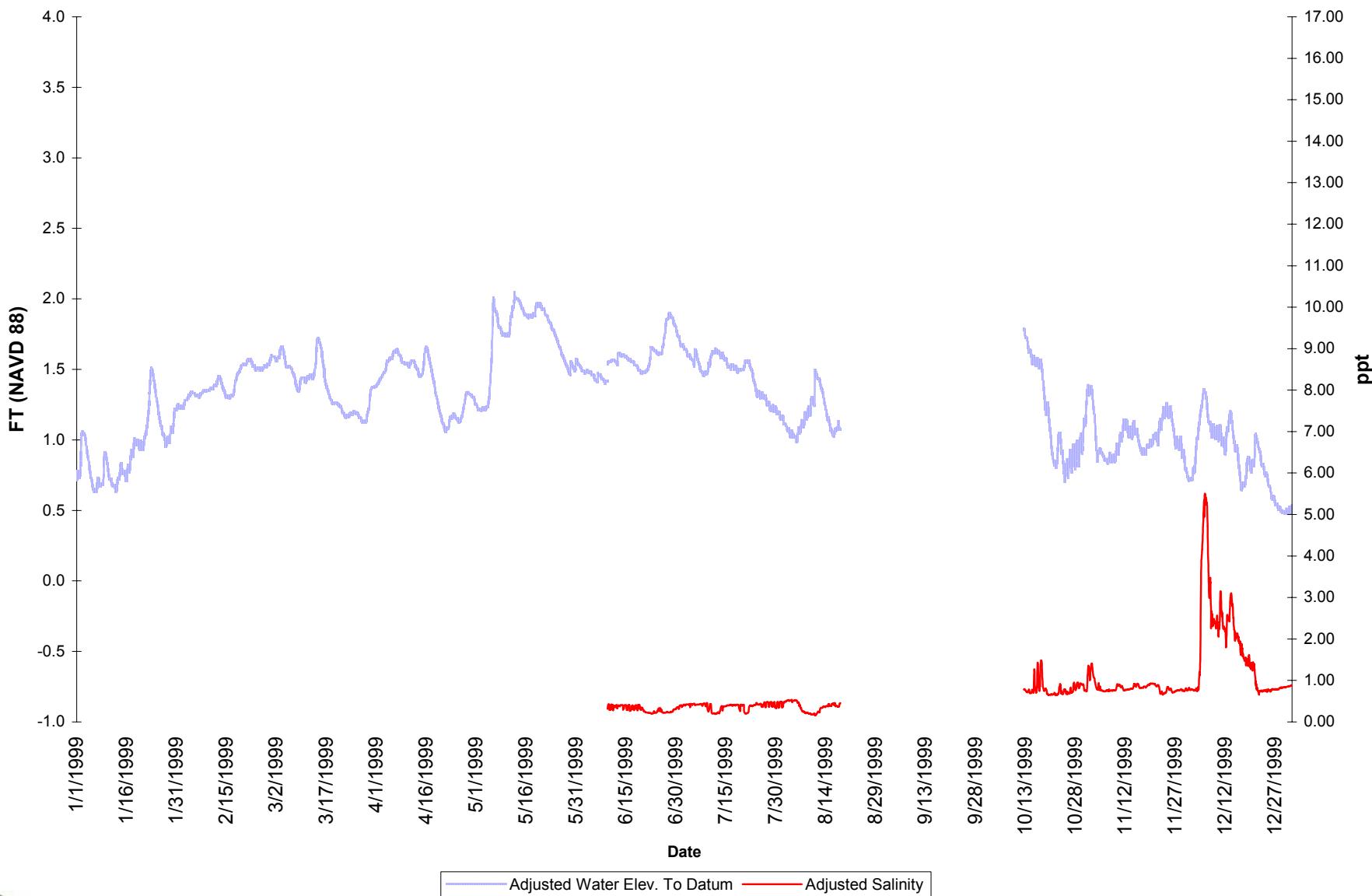
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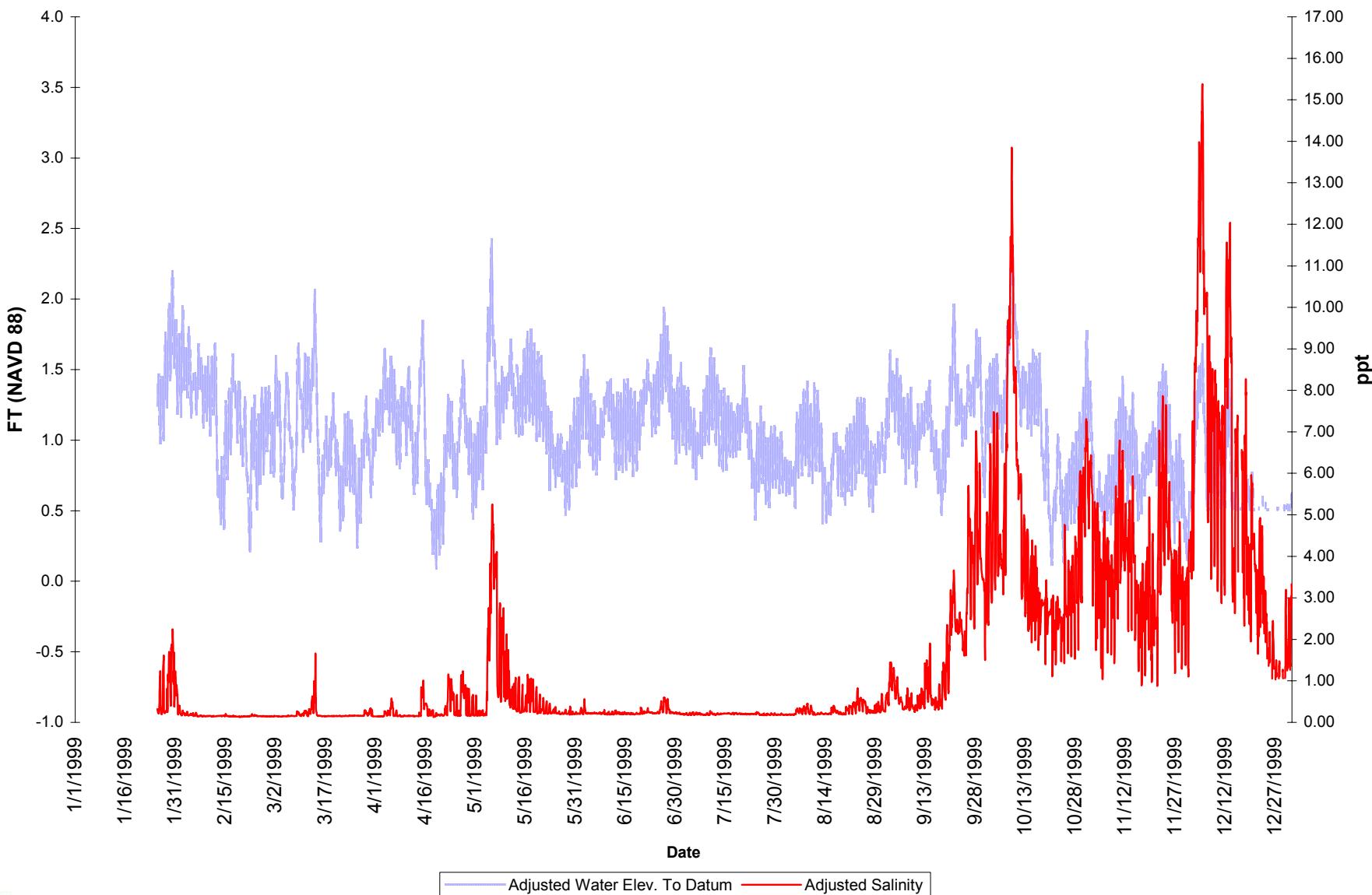
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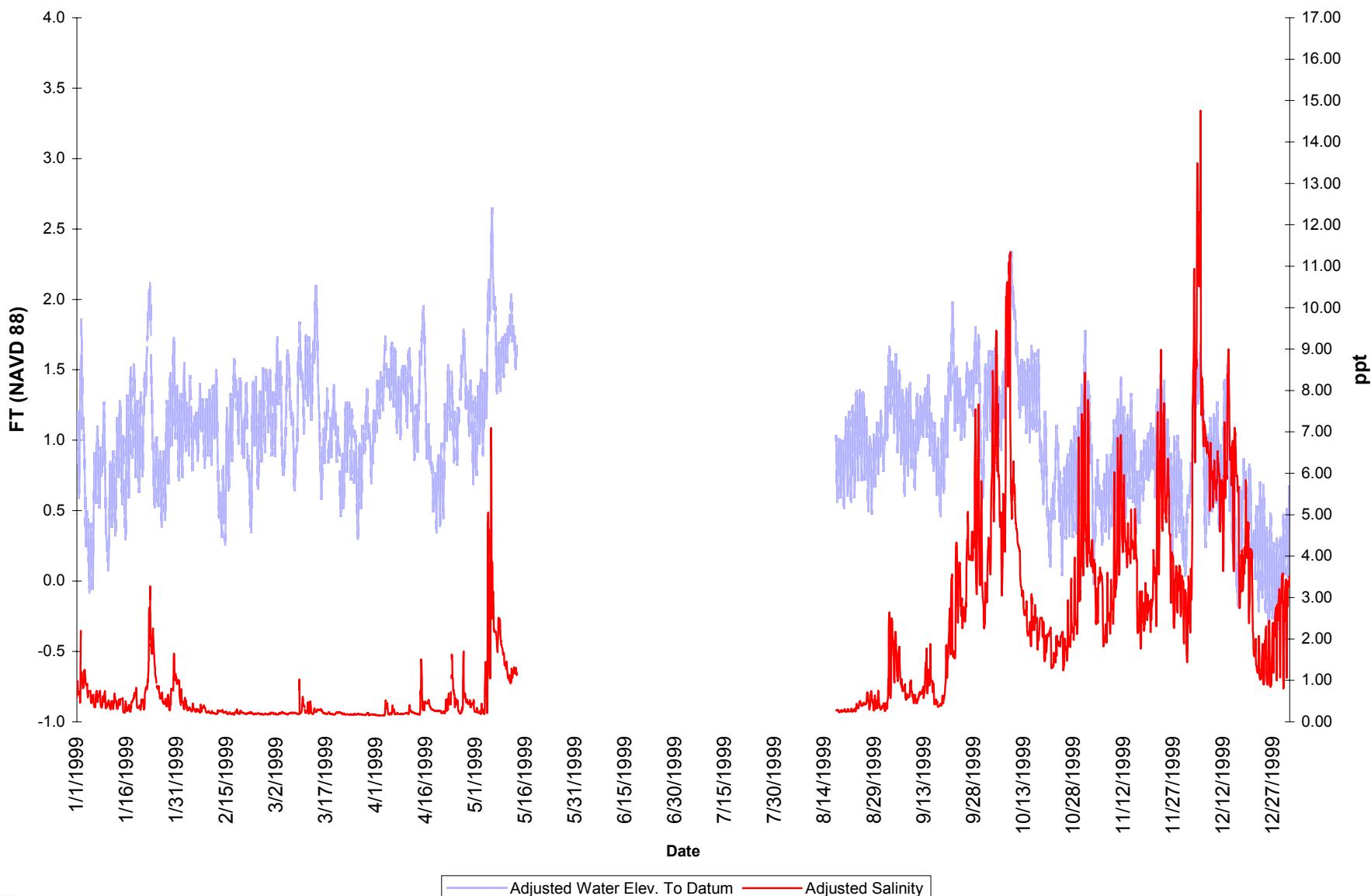
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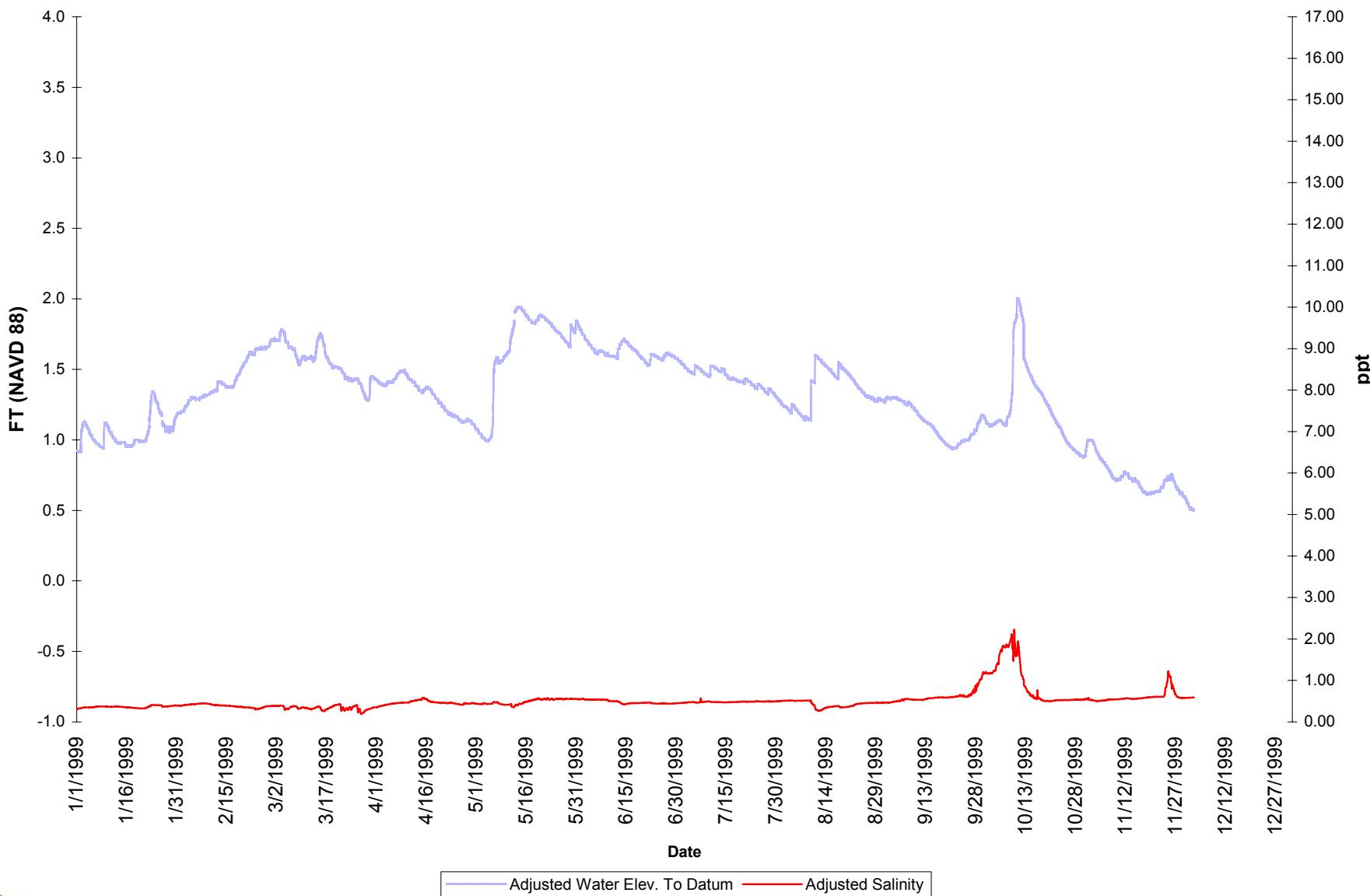
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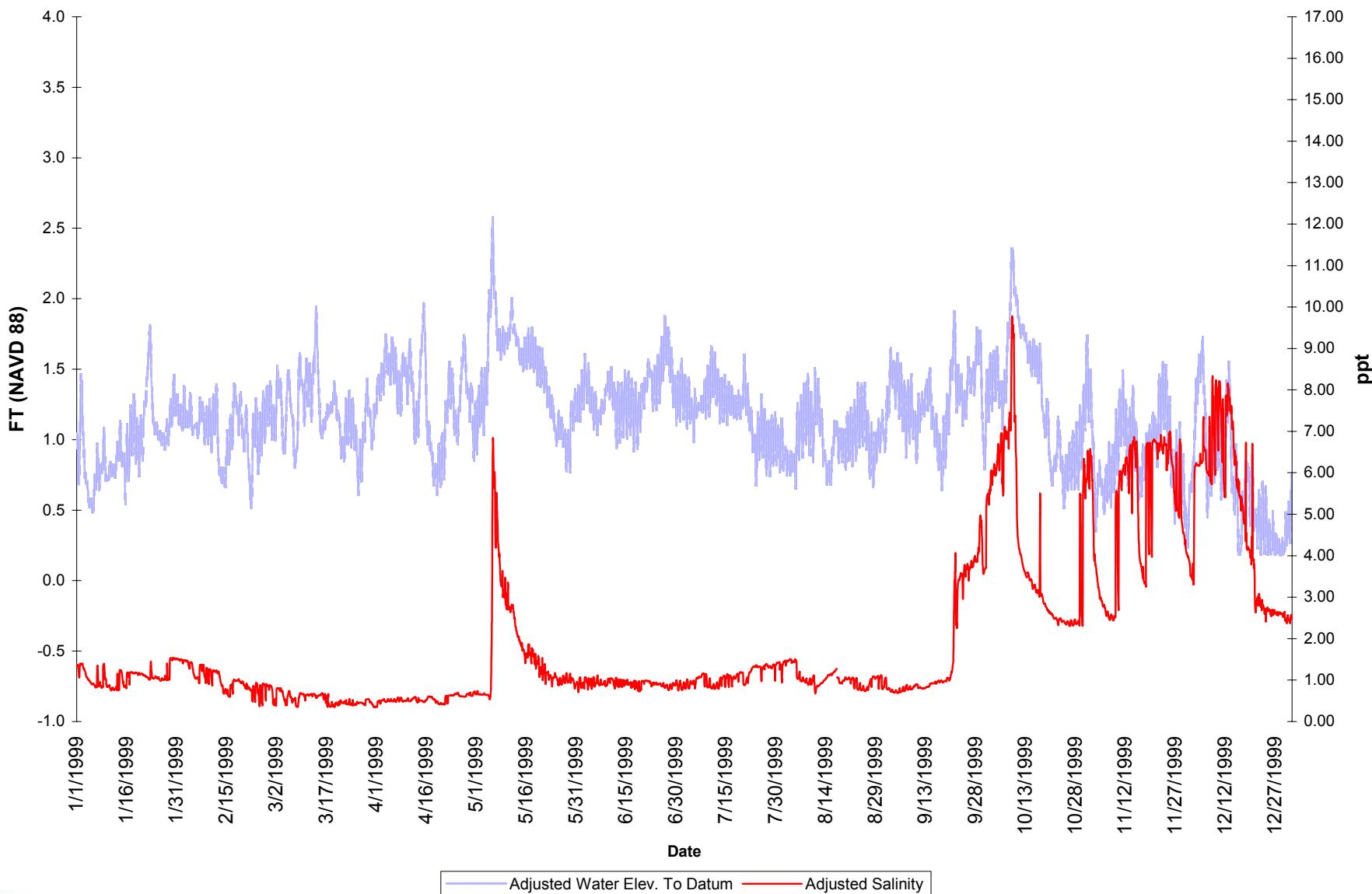
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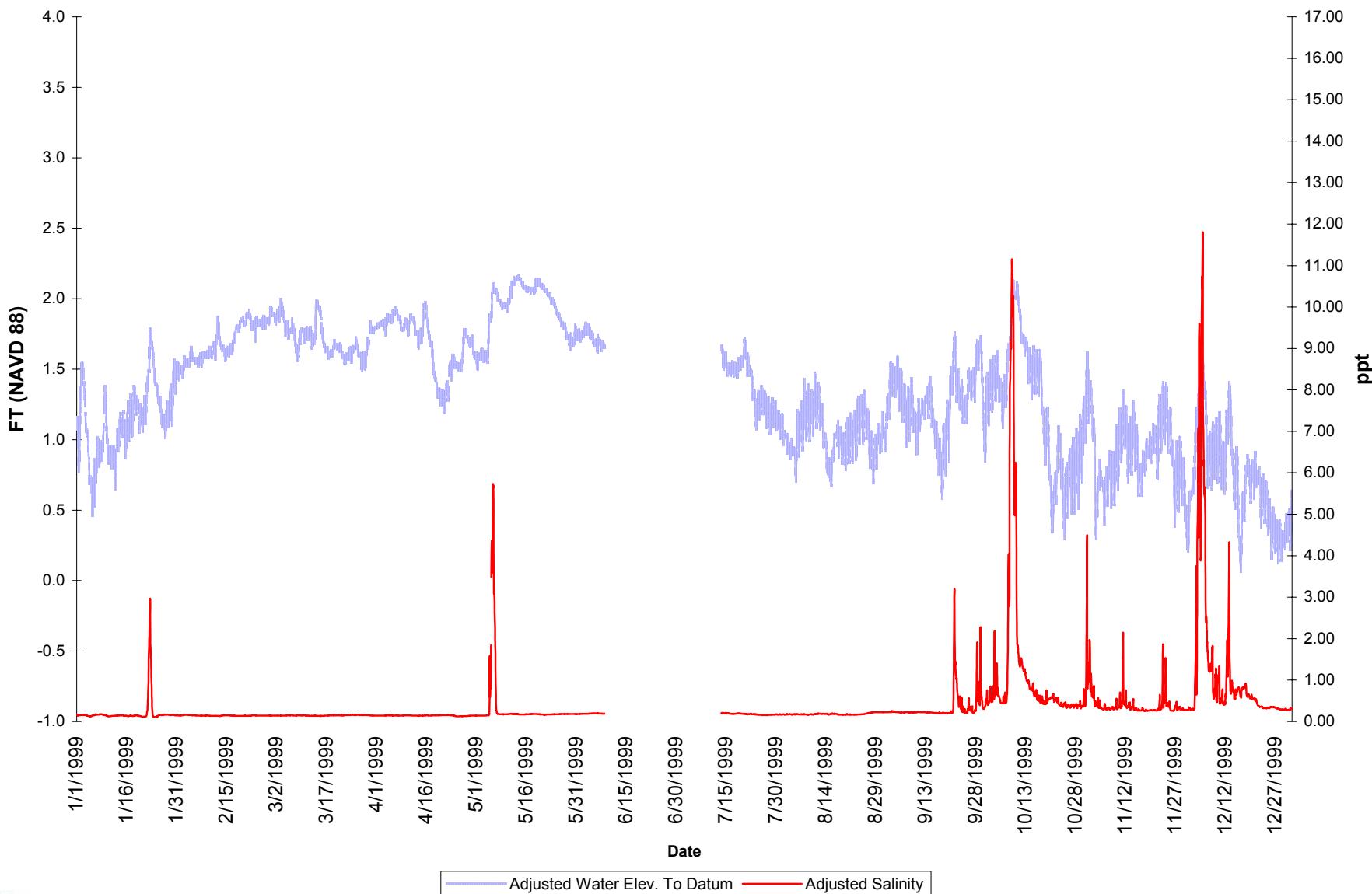
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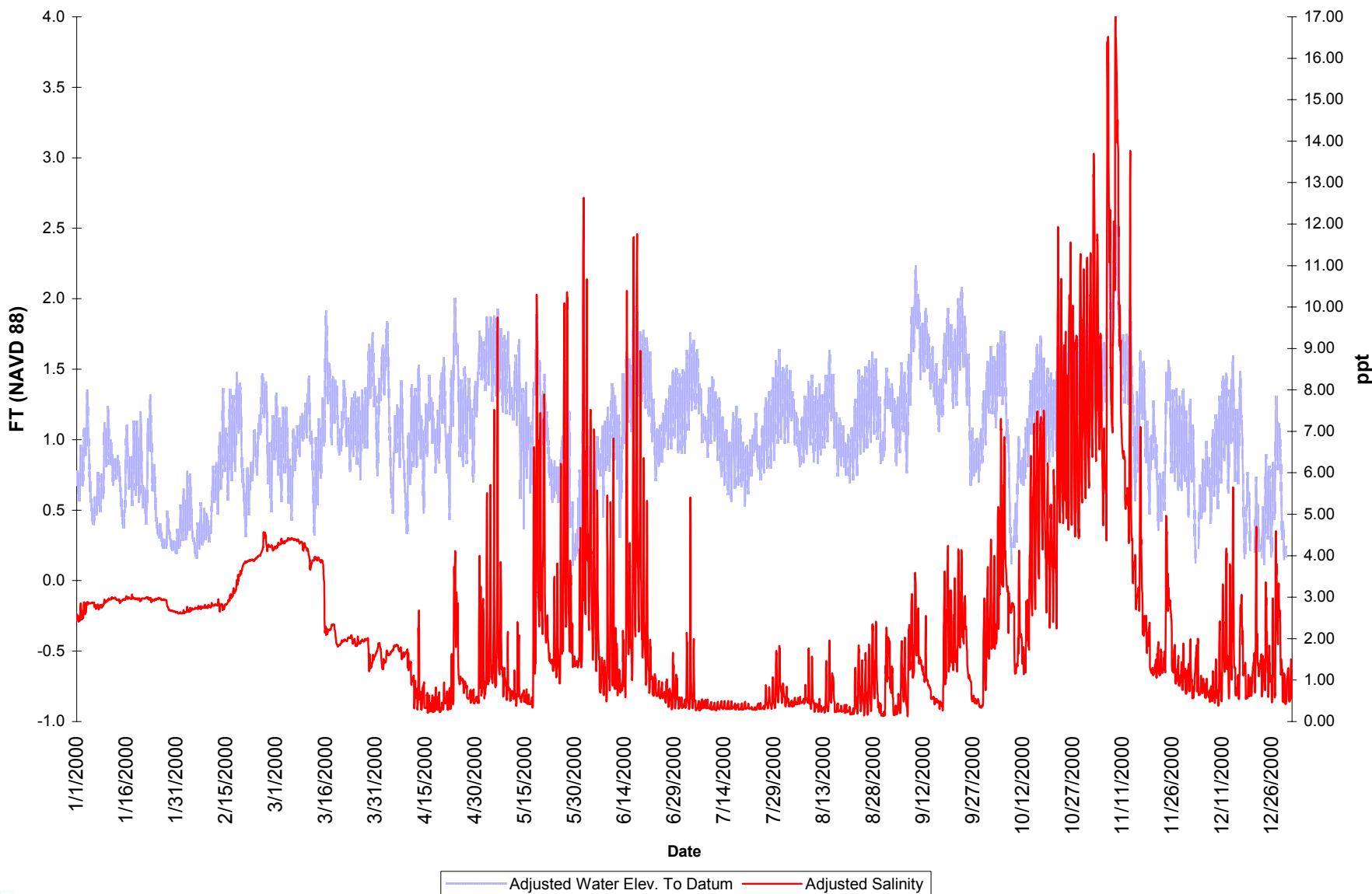
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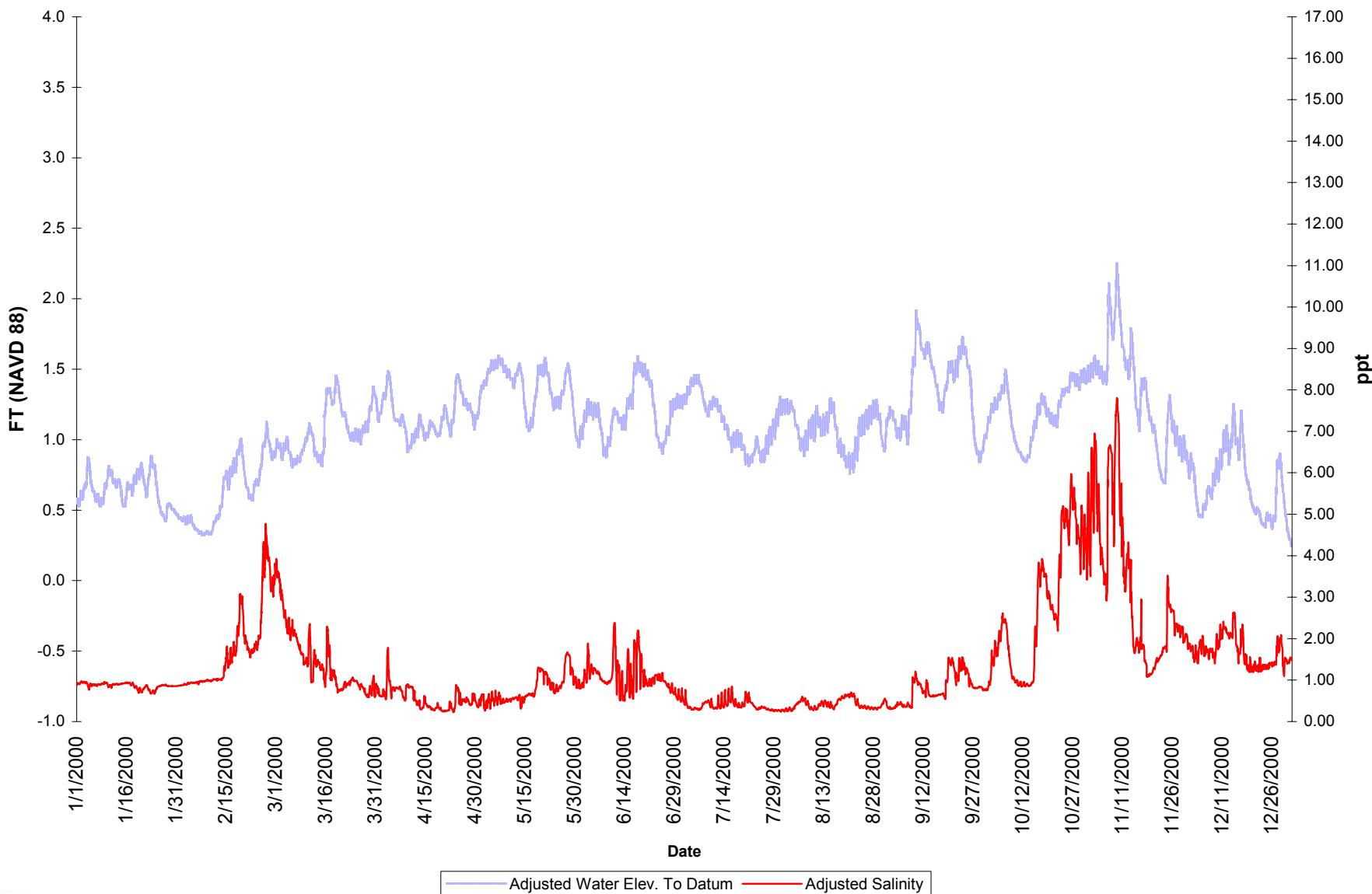
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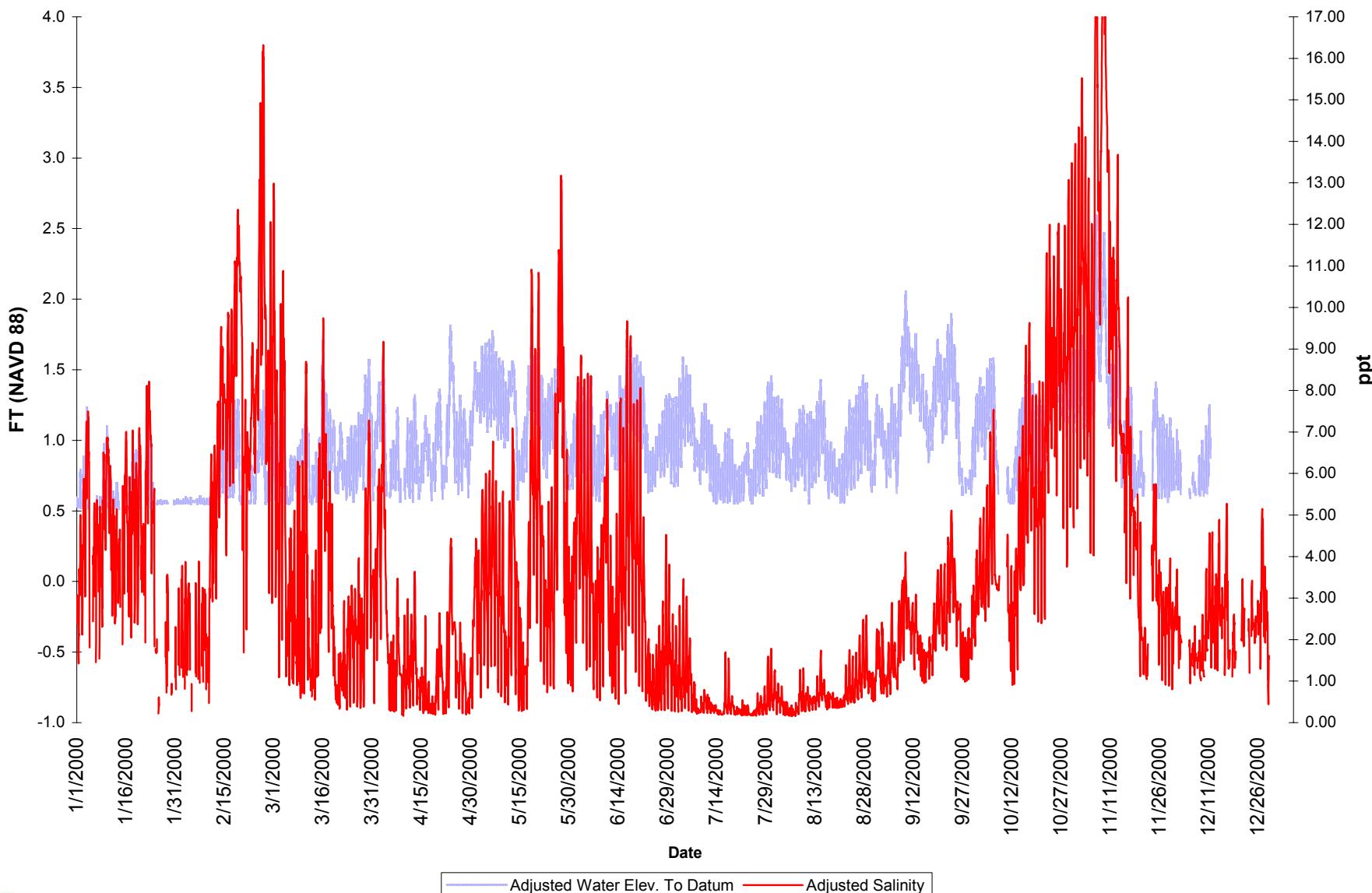
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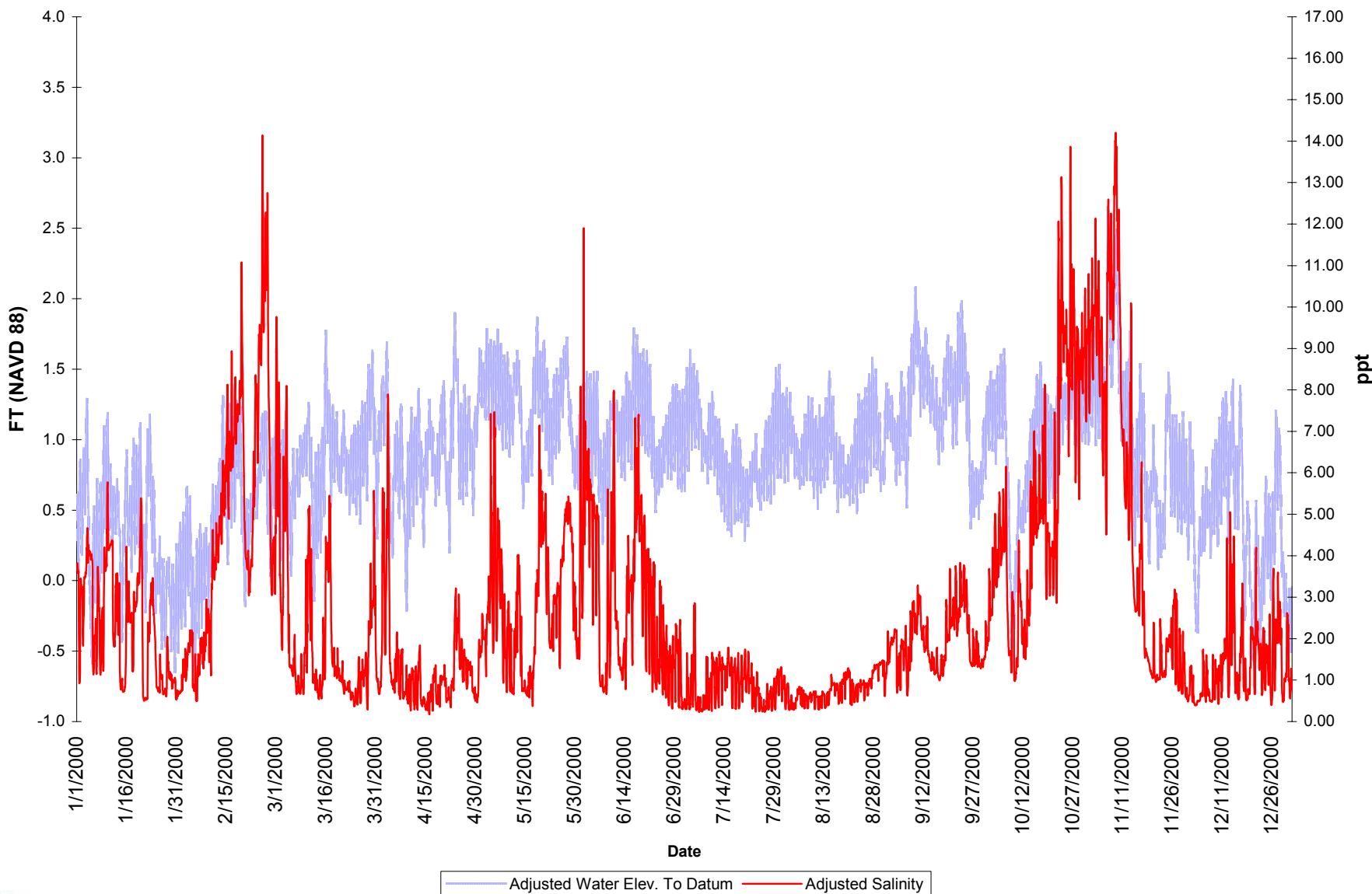
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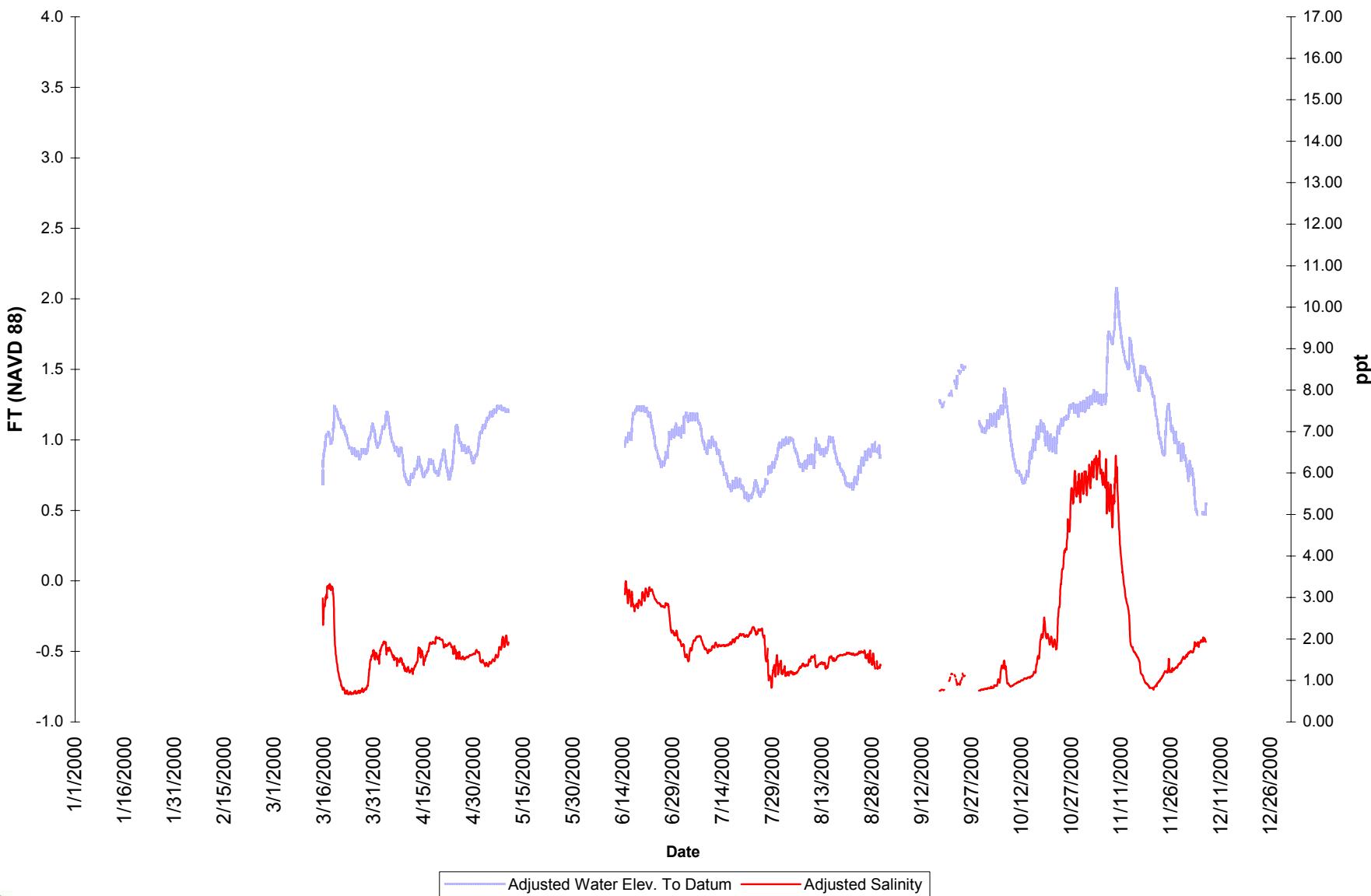
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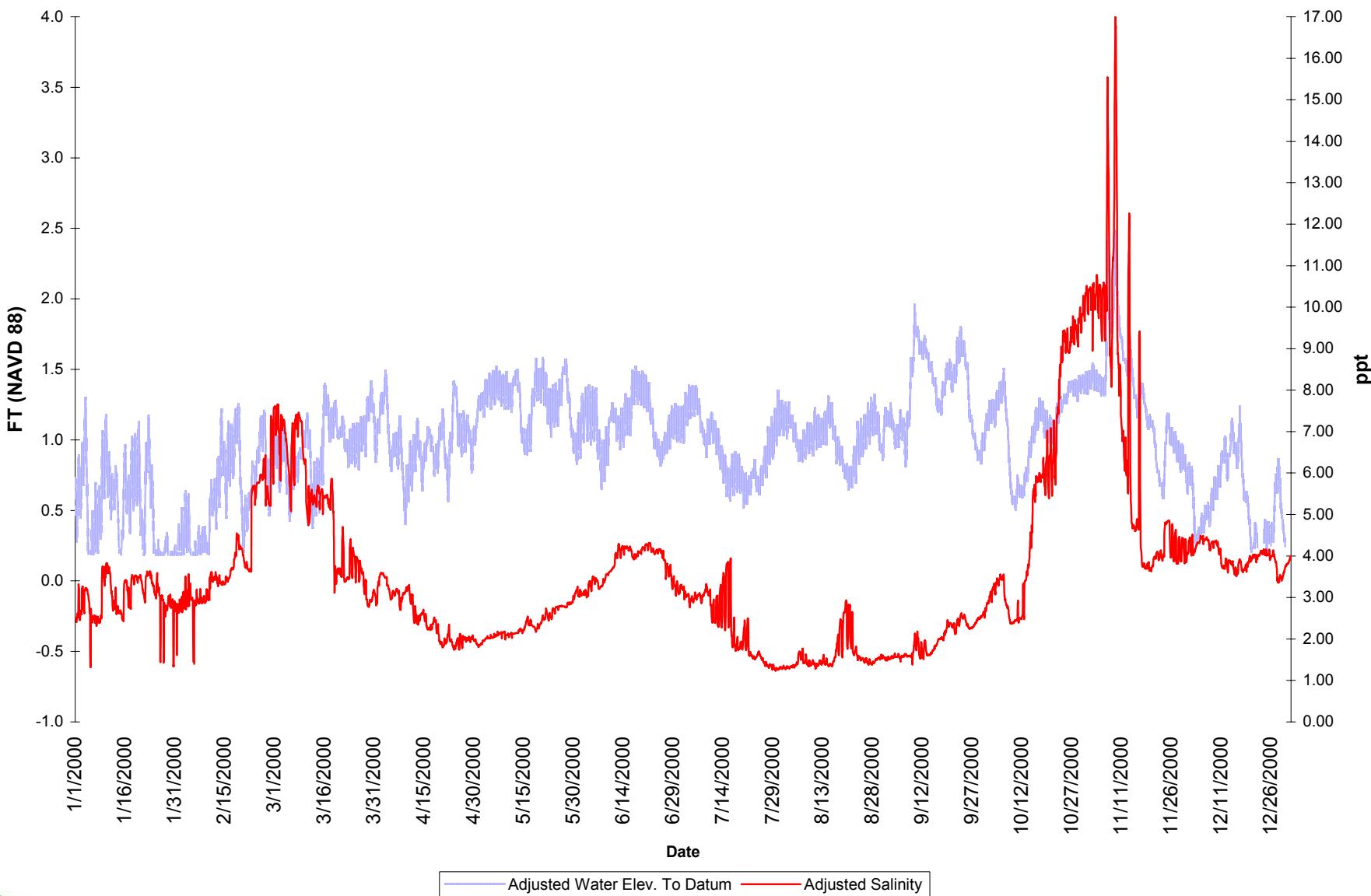
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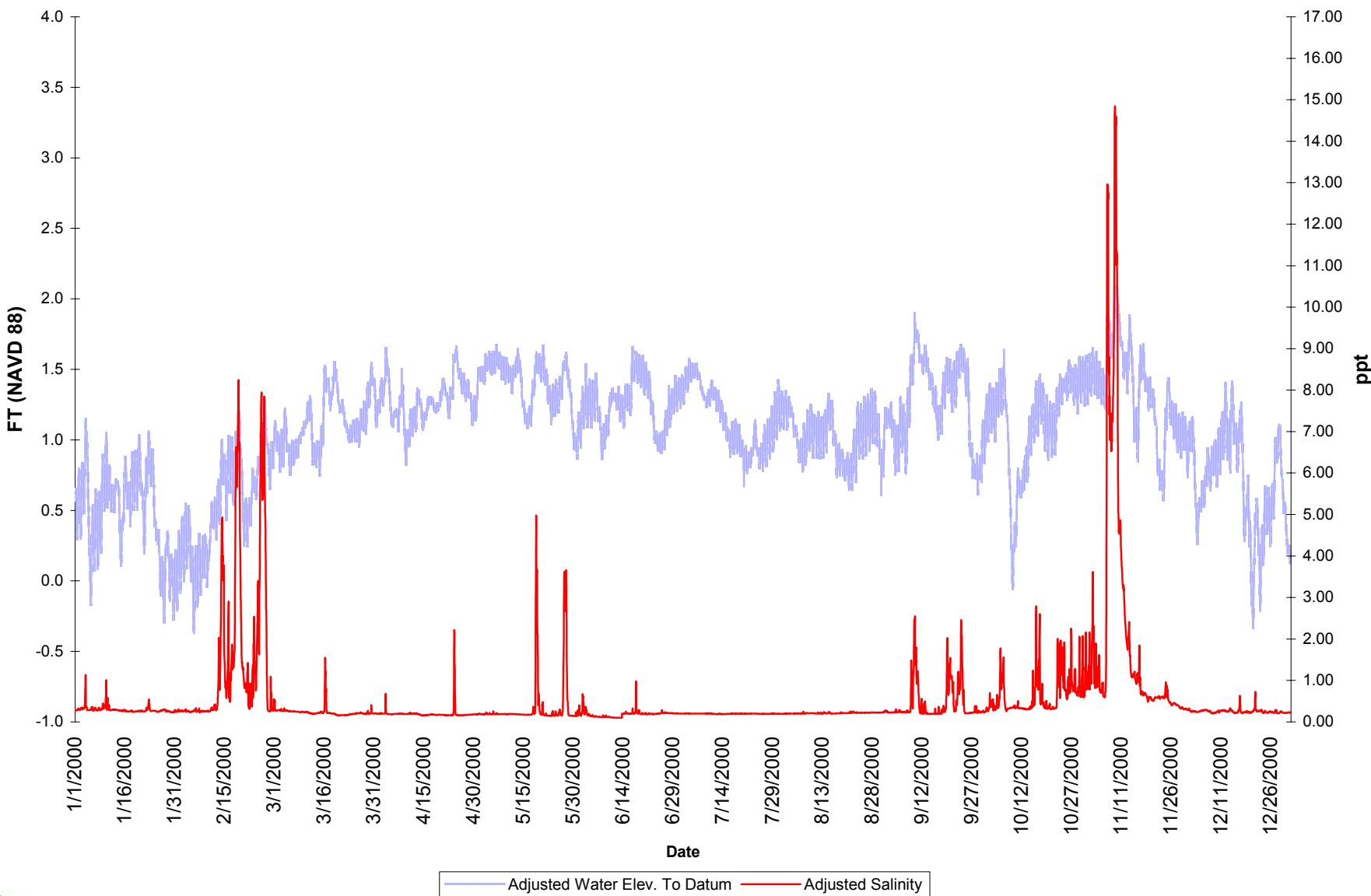
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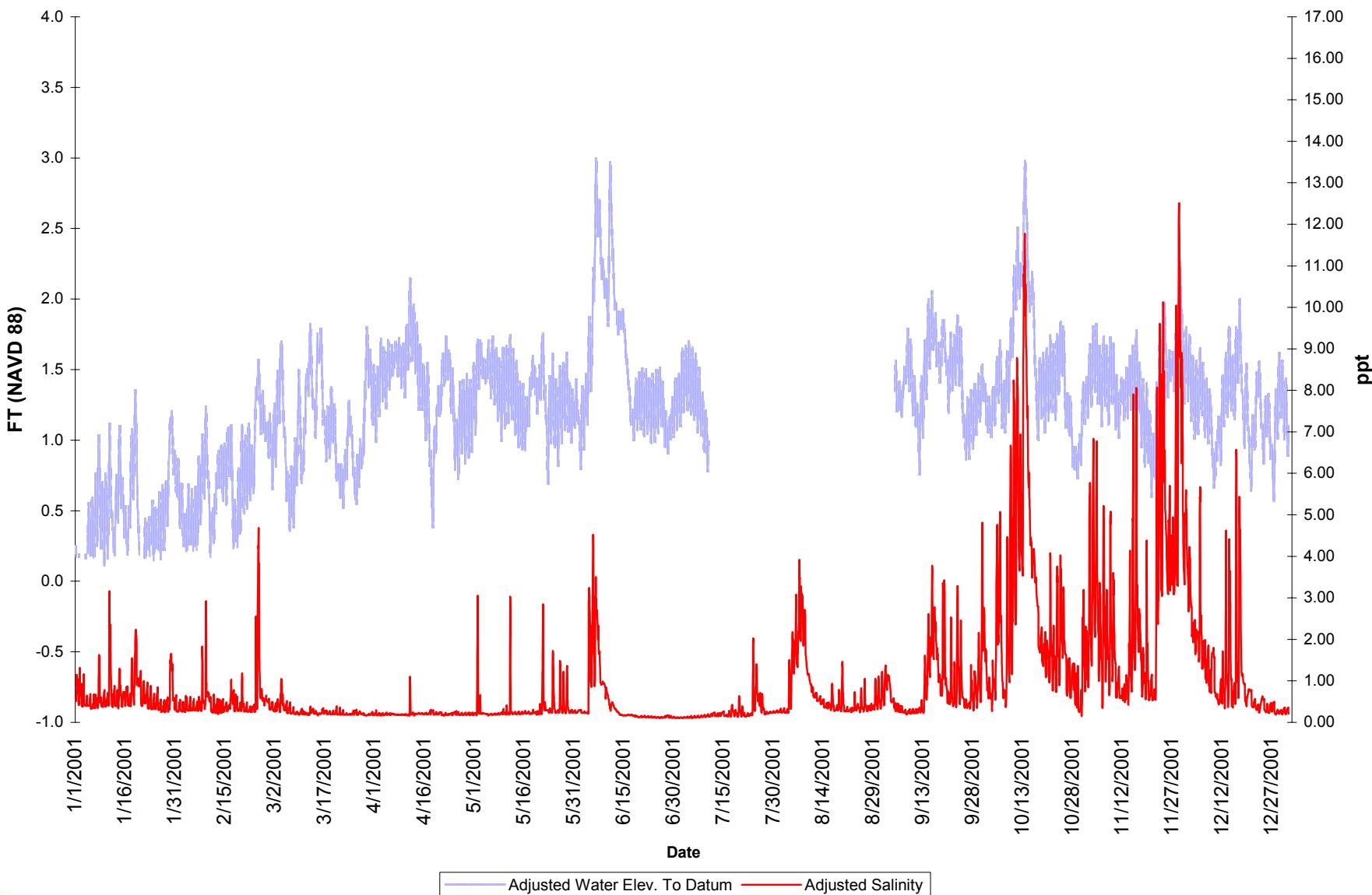
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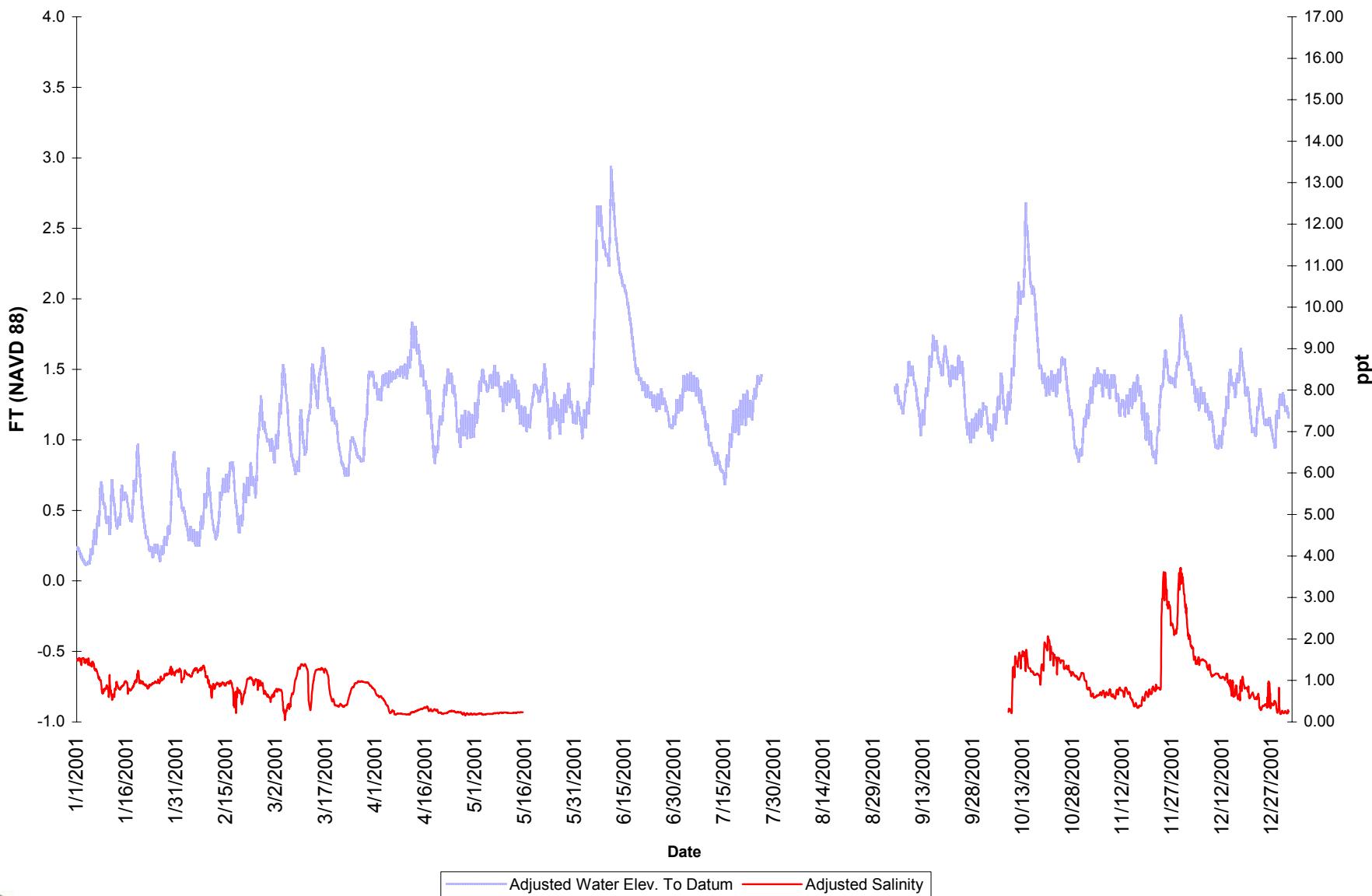
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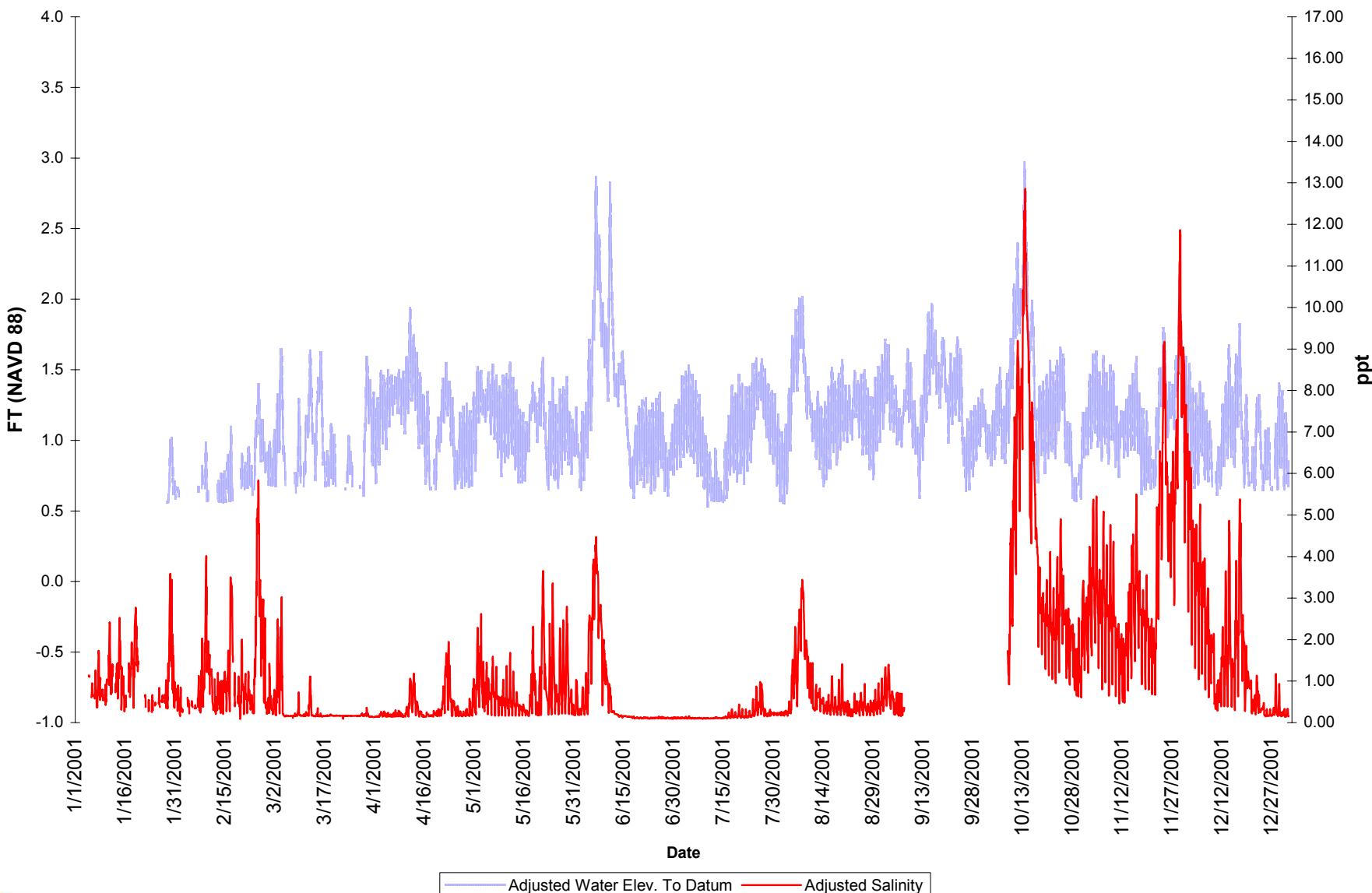
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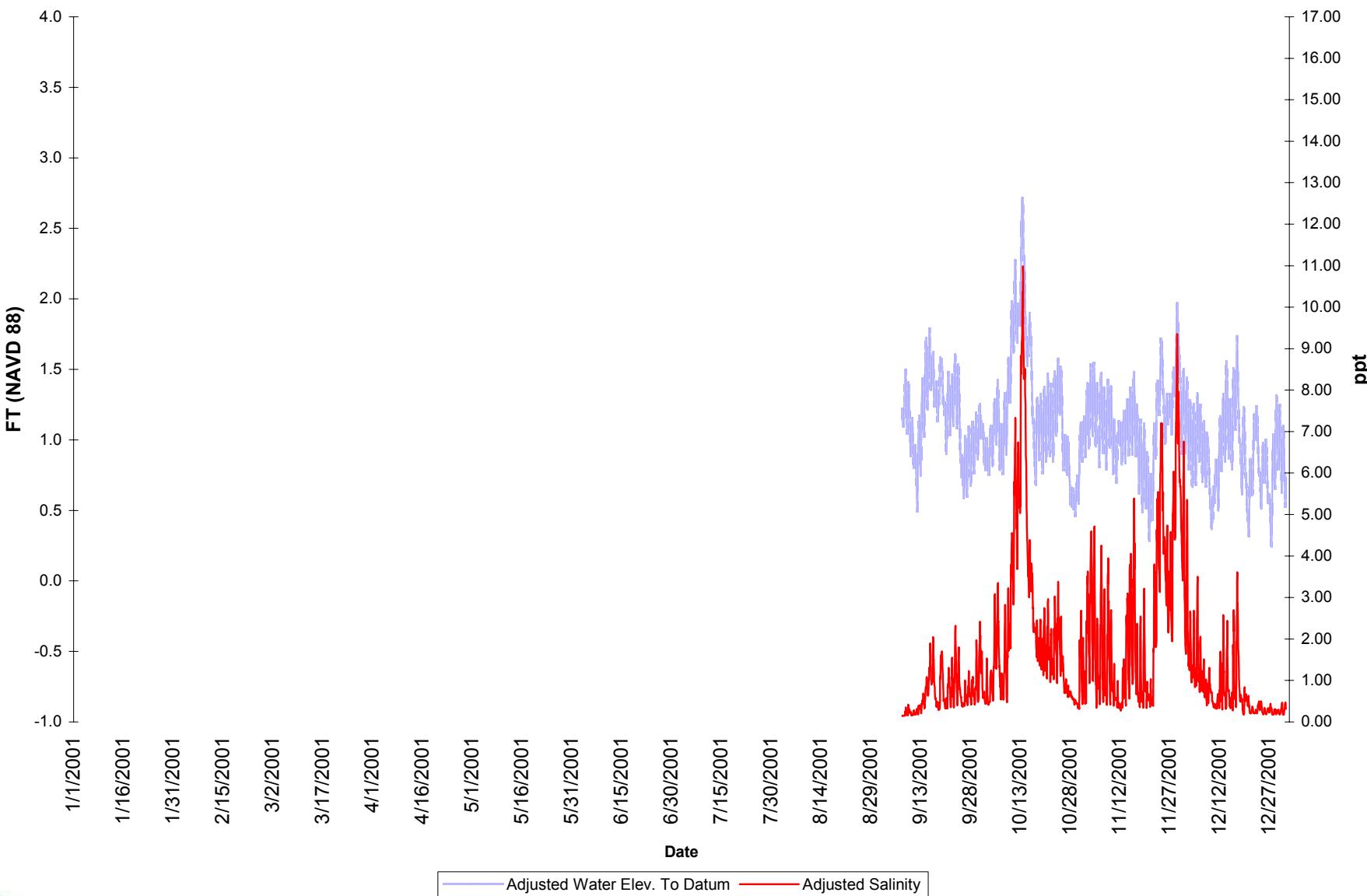
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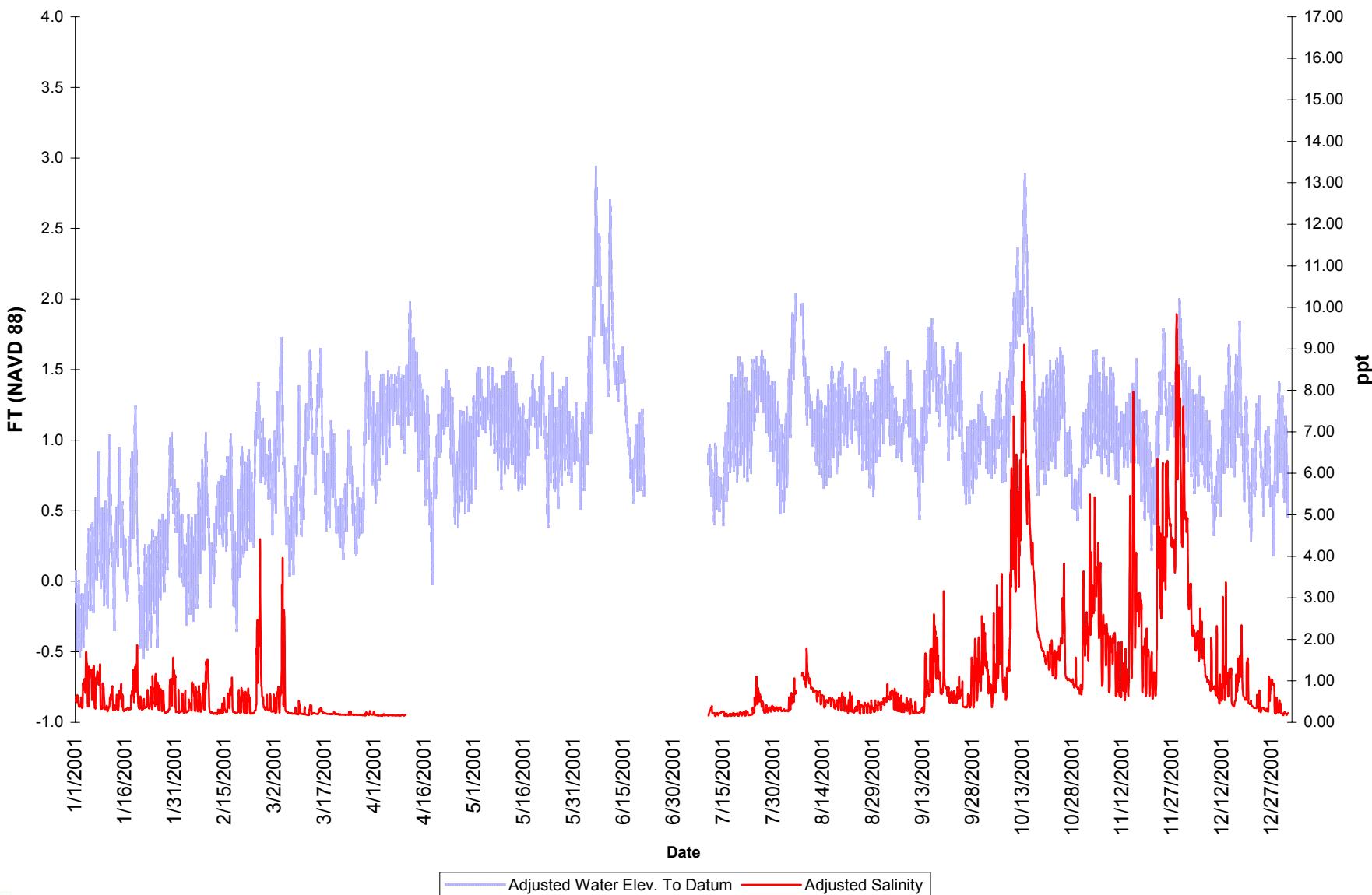
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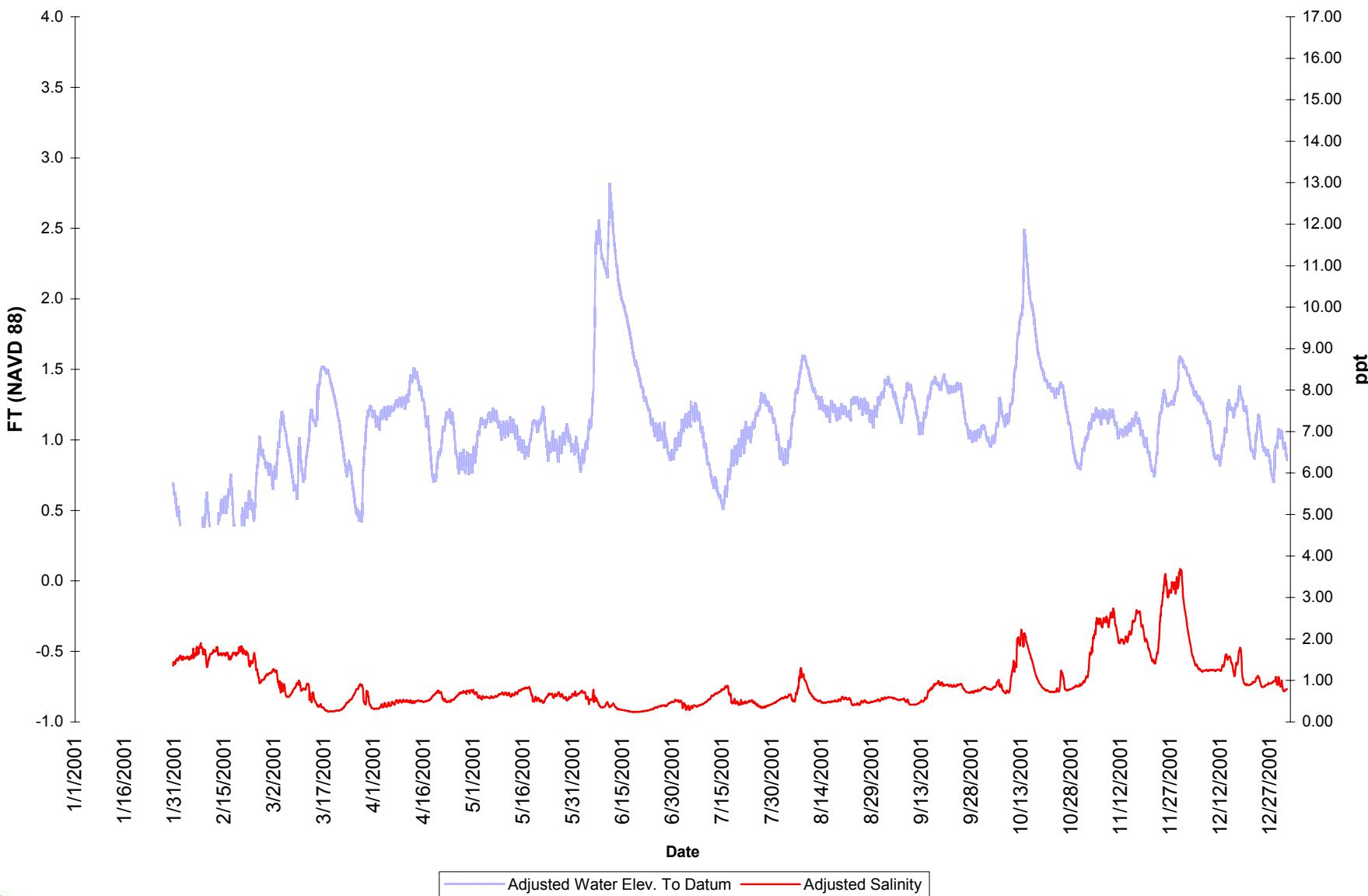
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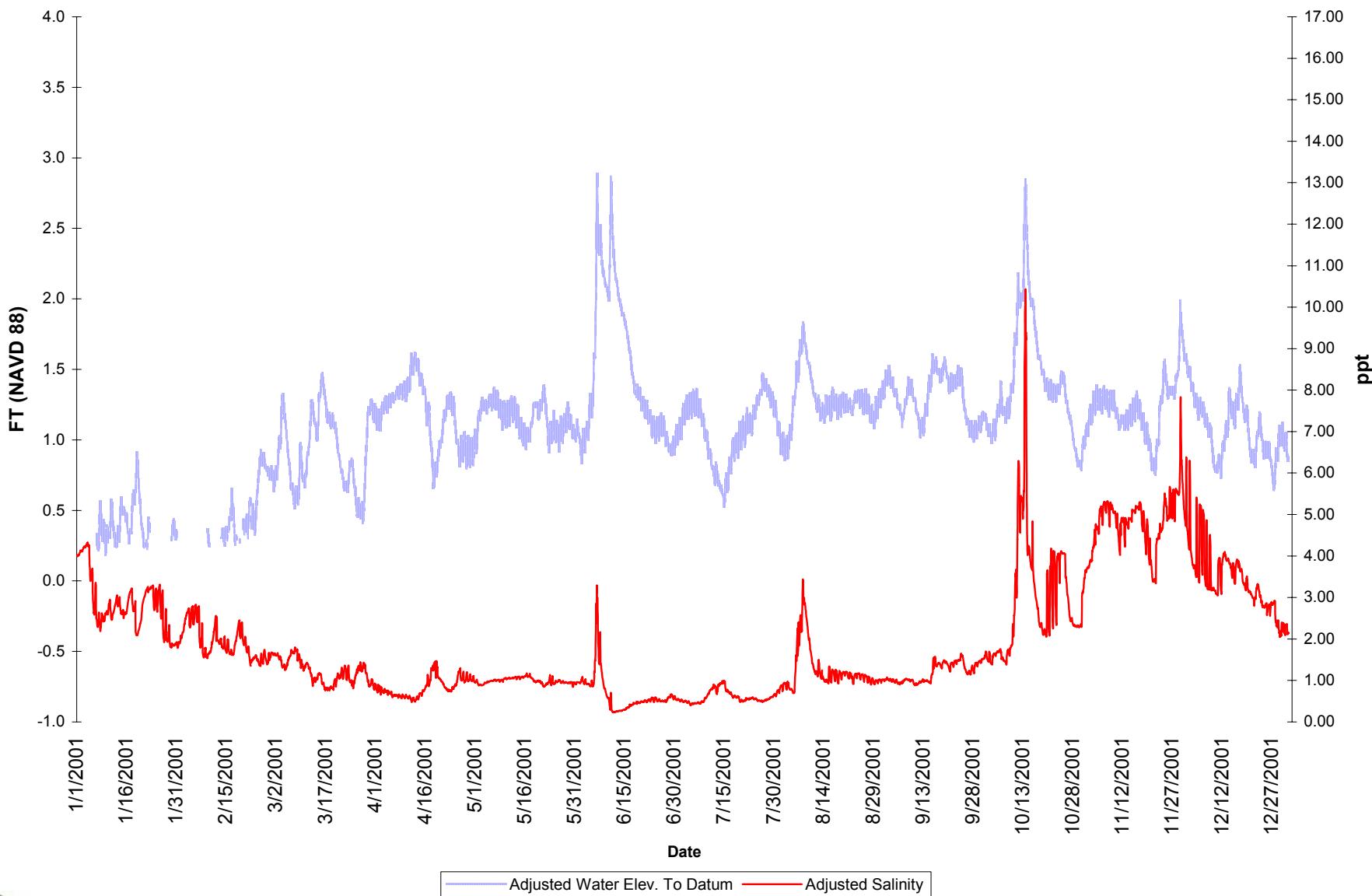
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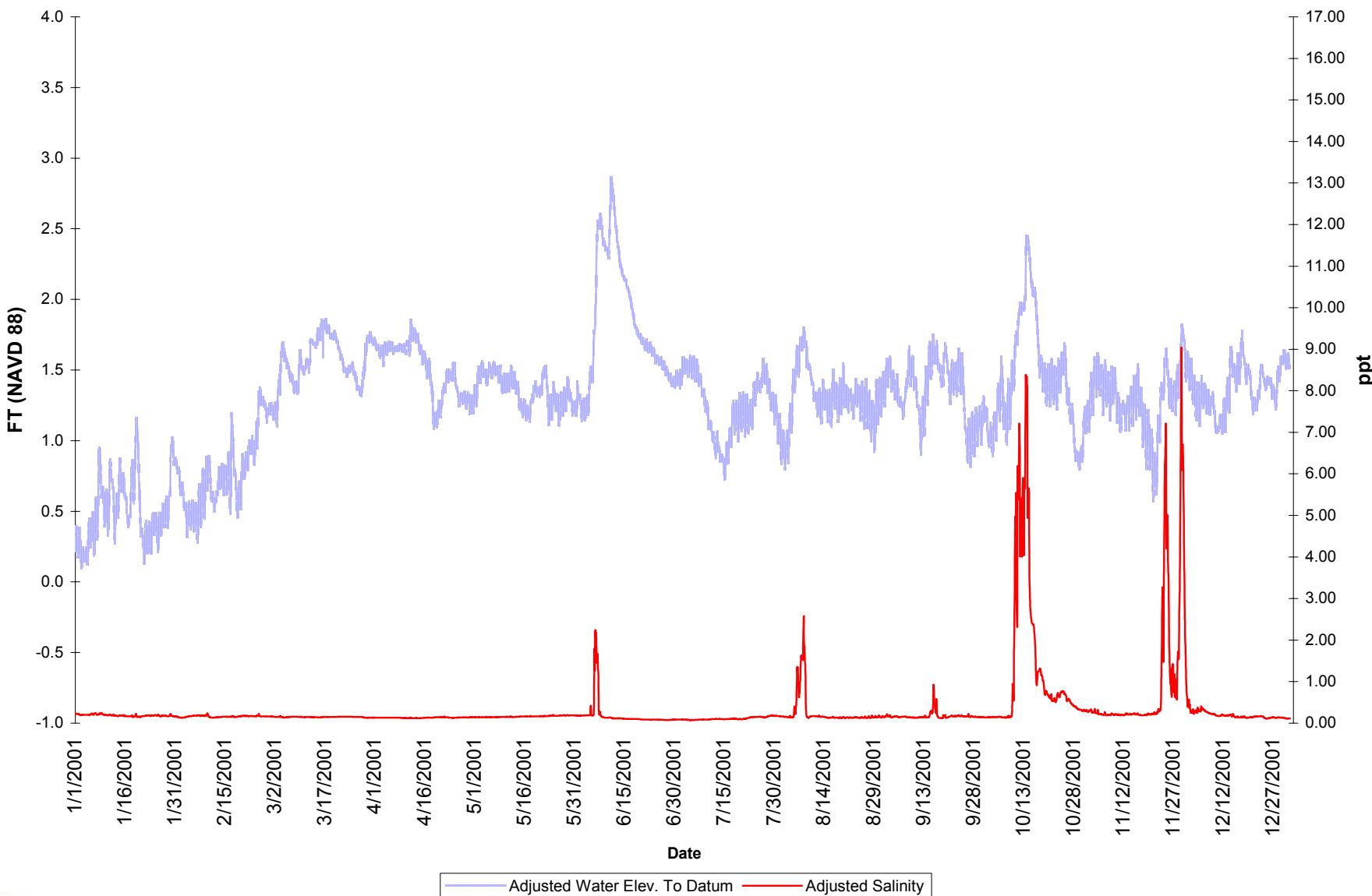
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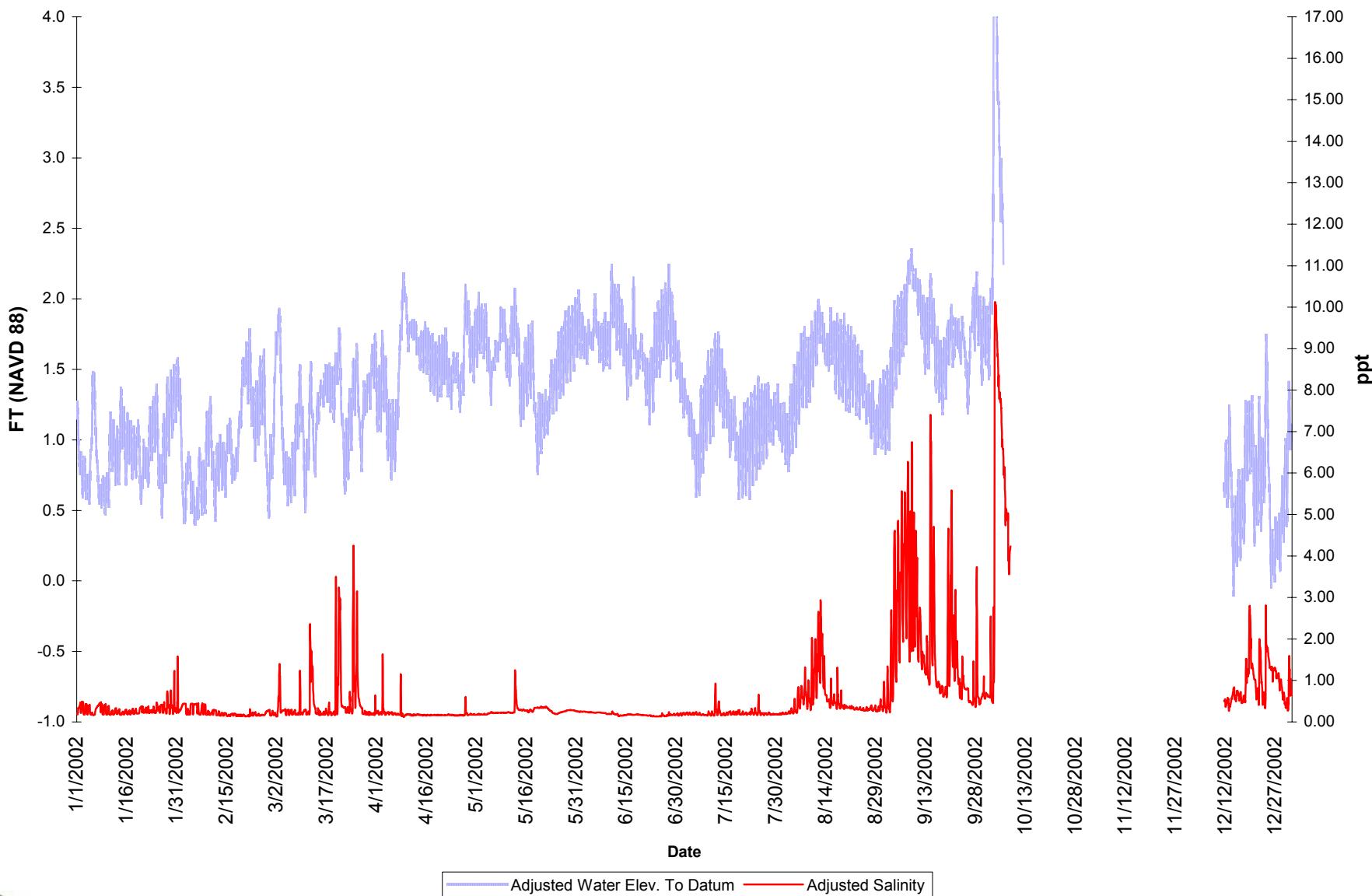
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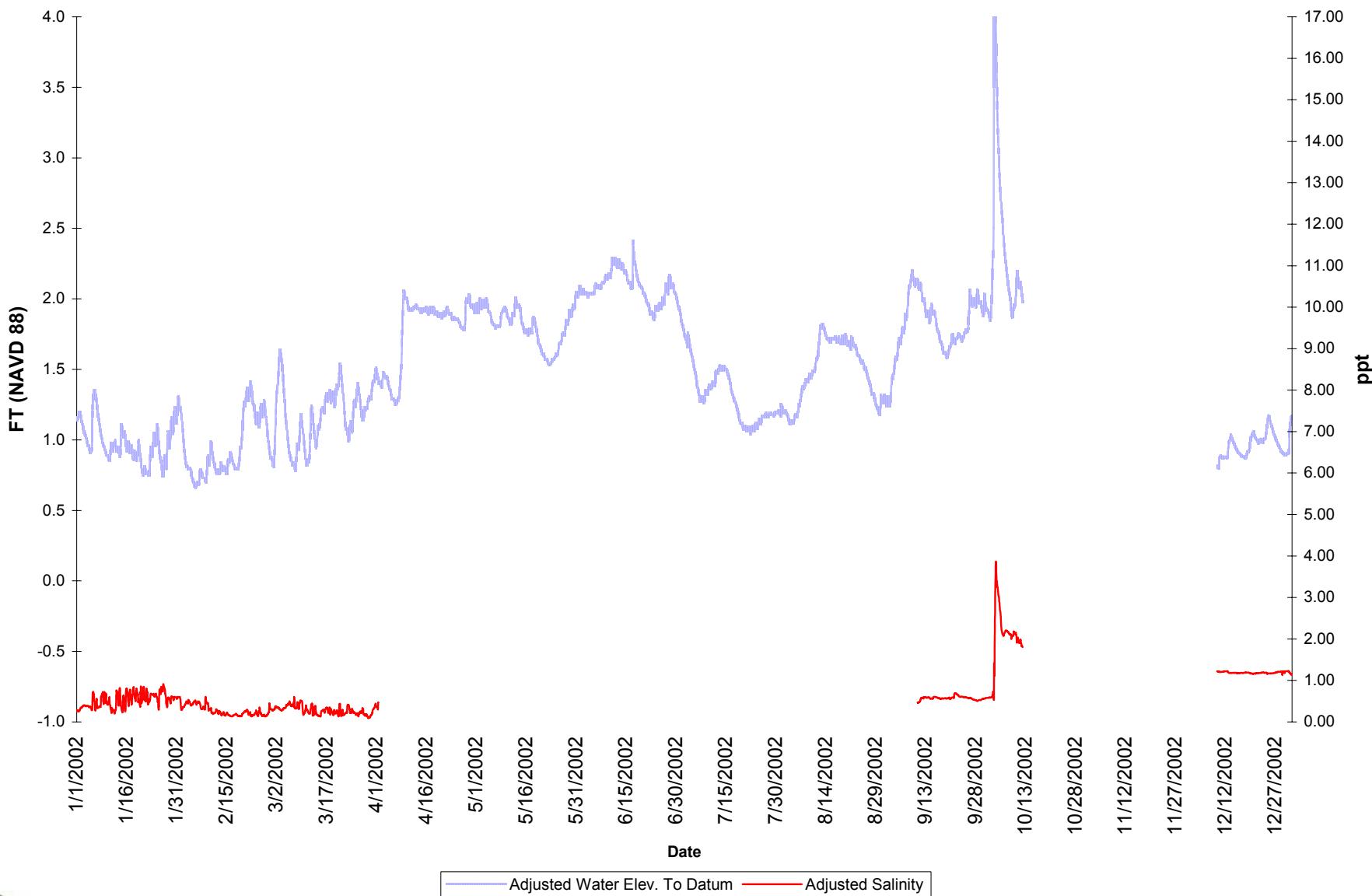
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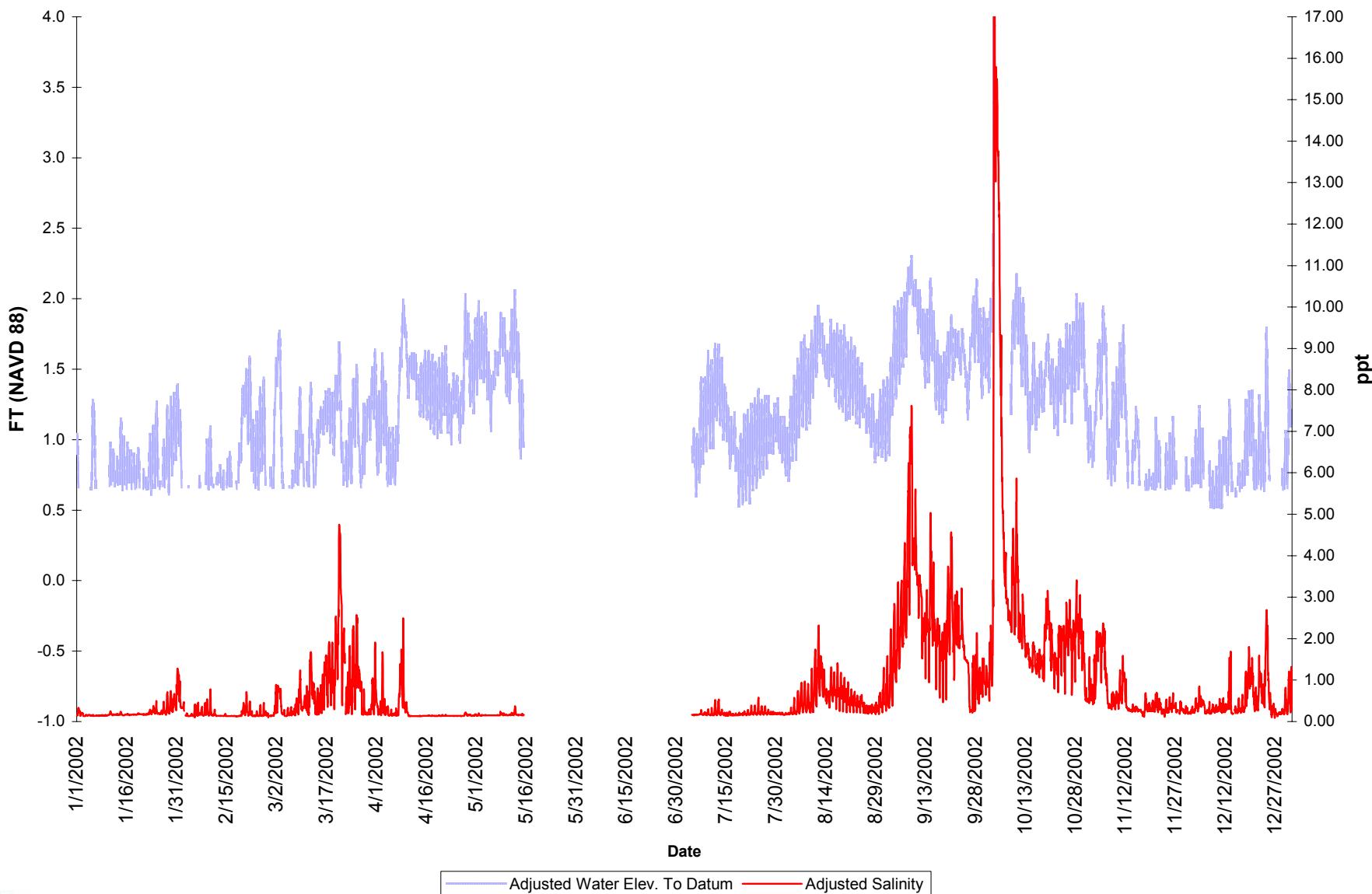
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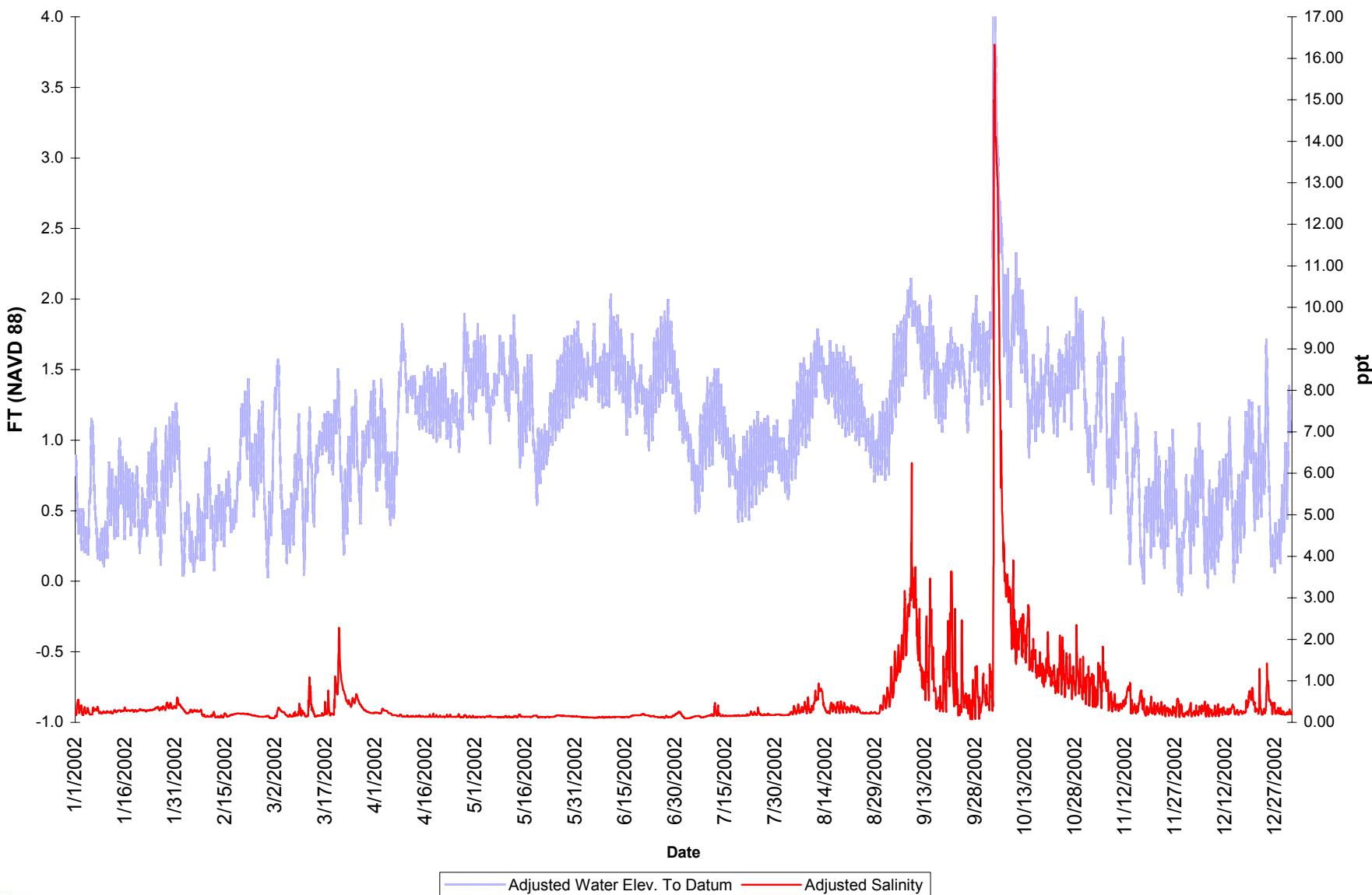
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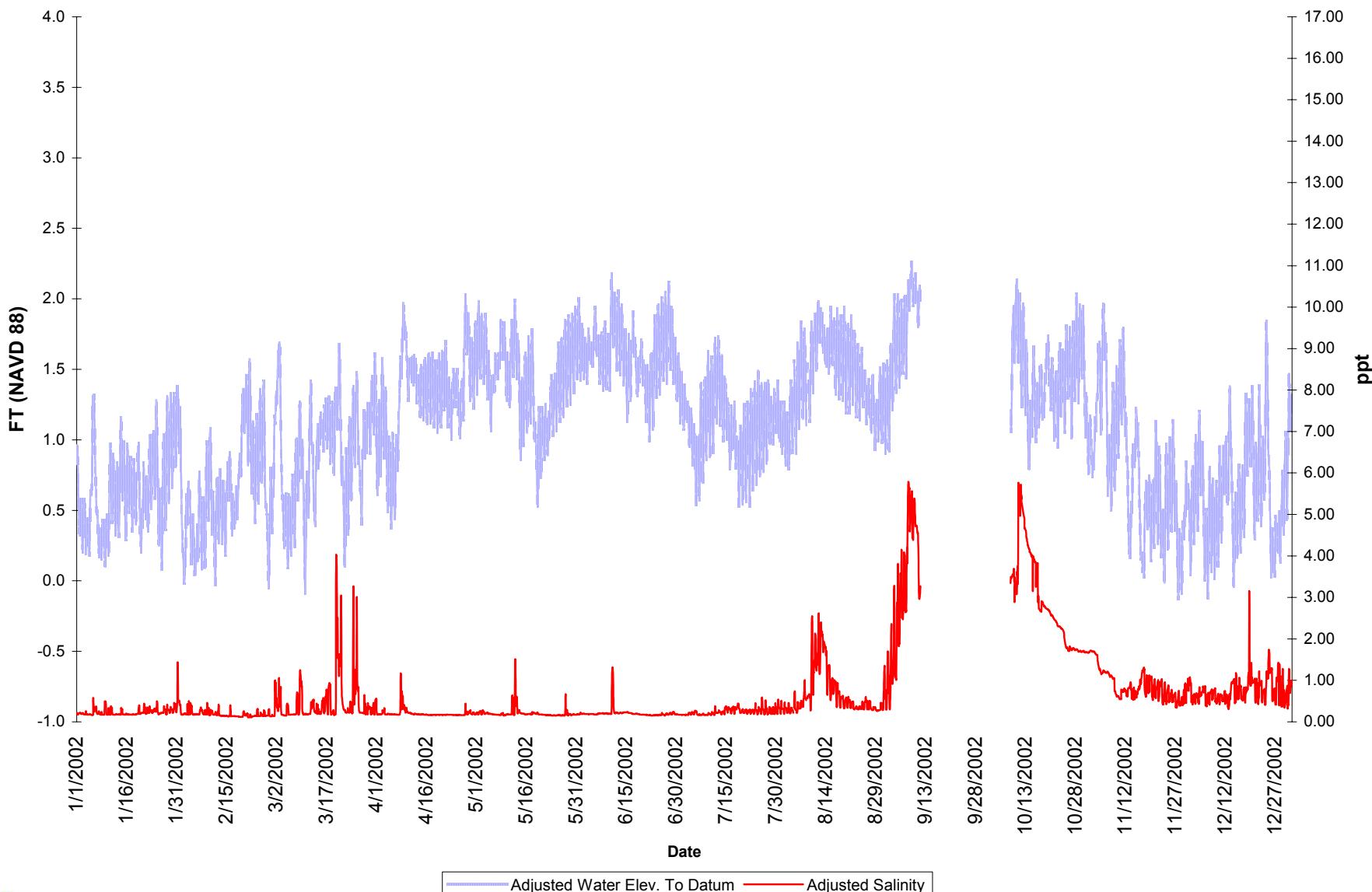
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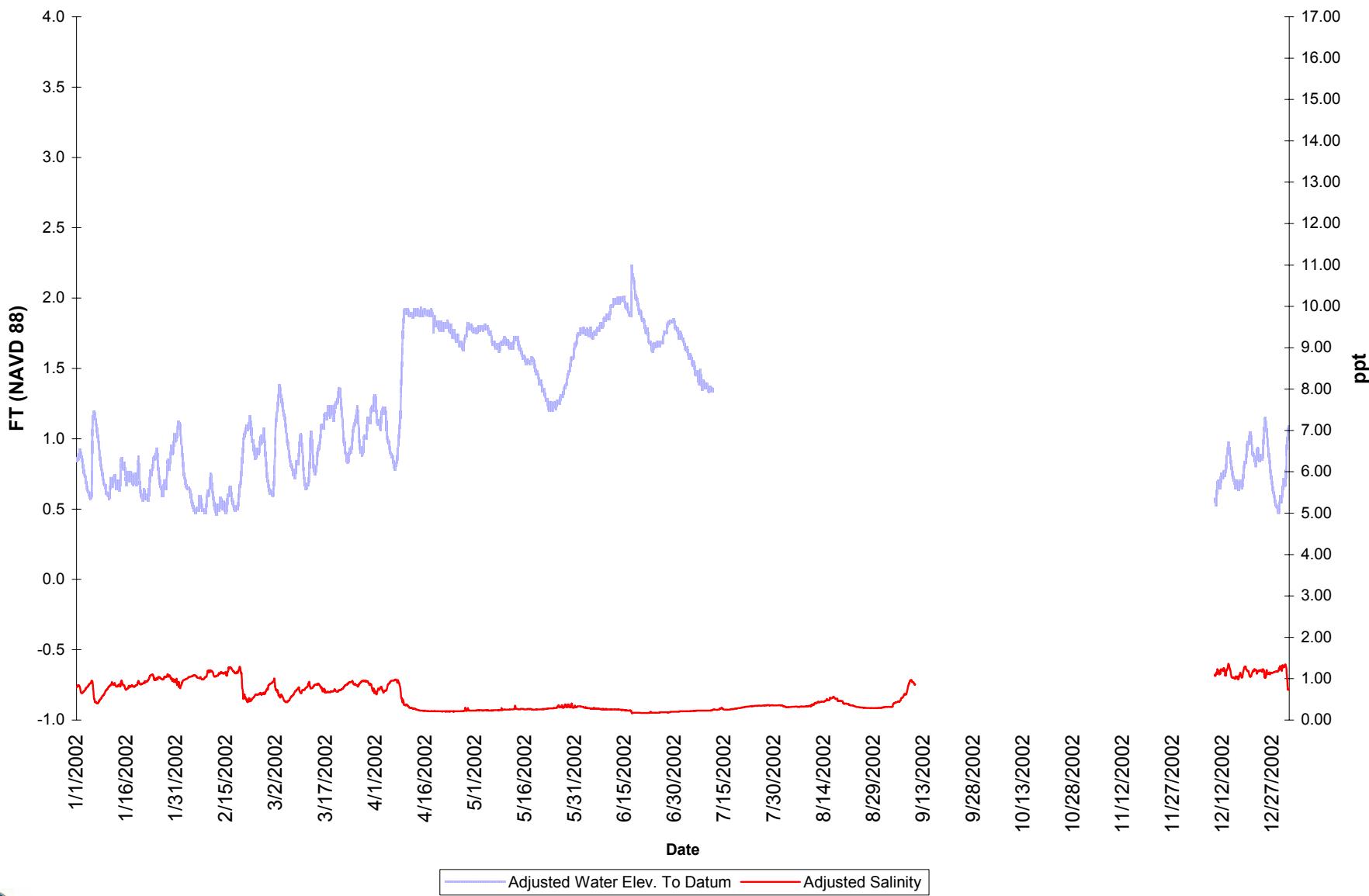
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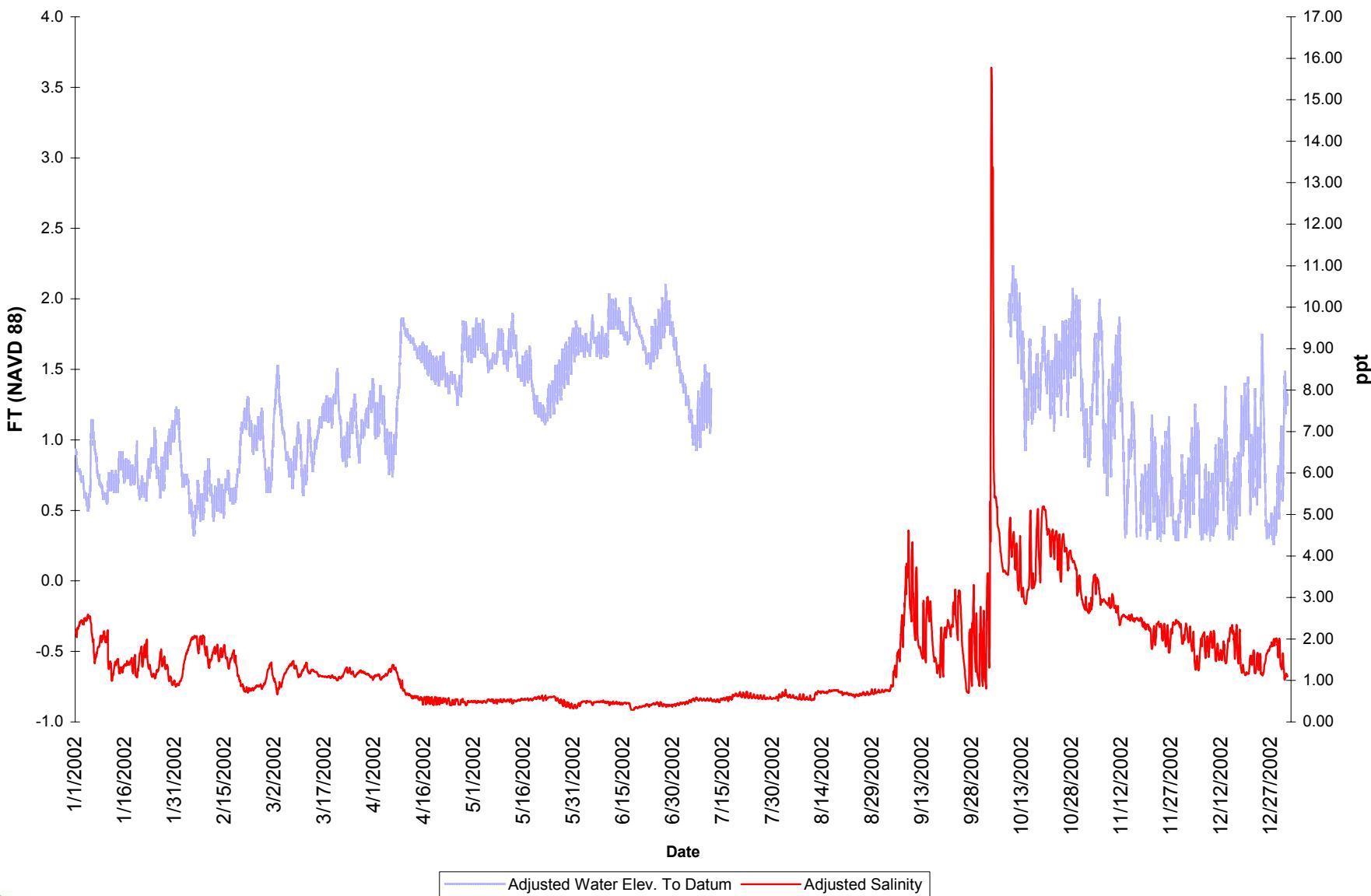
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